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EXPERIMENTAL STUDY OF EARLY SYPHILIS WITH NONSPECIFIC THERAPIES *

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AND

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ST. LOUIS

It has been known for a number of years that patients with syphilis, particularly those with neurosyphilis, are favorably affected by the production of a rise in body temperature. Probably the earliest investigators to use nonspecific protein therapy in syphilis were Engman and McGarry,[1] who in 1916 treated a few cases of generalized early syphilis with typhoid vaccine intravenously. They noted a moderate improvement in the eruption. One conception has been that the heat alone was the main factor in producing the beneficial effect.

Cady, Engman and Elle [2] recently inoculated albino rats with Trypanosoma brucei and subjected them to various degrees of heat. Briefly, the method was as follows: A Victor variofrequency diathermy apparatus was used. The rats were placed in a high frequency induction field for a period of time varying from fifteen to forty-five minutes. The body temperature (rectal) was raised from 1 to 3 degrees centigrade. Normal temperature in the rats ranged from 34 to 37, and temperatures of from 38 to 42 were obtained. Temperatures above 42 C. were fatal. It was found that raising the body temperature even repeatedly in the inoculated rats had no effect either on the virulence of the trypanosome or on the duration of life of the infected rat.

These experiments suggested that, in syphilis, the beneficial effect of fever therapy may be entirely nonspecific in nature and that the fever (heat) itself is a factor of minor importance.

Working from this assumption, we selected twenty-nine patients, almost all of them in the primary and secondary stage of the disease. These patients were submitted to a form of treatment which consisted of a combination of agents, each of which is supposed to stimulate nonspecific forces in the animal organism.[3] Thyroid extract and a saturated solution of potassium iodide were given in small dosage. An erythema was produced on the skin generally with the air-cooled mercury vapor quartz lamp. A foreign protein shock was produced periodically with increasing doses of typhoid vaccine given intravenously. In the first group of eleven cases there was given, in addition to the aforementioned treatment, an intravenous injection of a 1 per cent solution of mercuric chloride in physiologic solution of sodium chloride. This was not given from the standpoint of specific treatment but with the idea in mind of a possible nonspecific stimulation of the defense mechanism of the body.[3] For this reason we chose the height of the temperature rise as probably the most suitable time for the injection.

The treatment schedule outlines briefly the method pursued in each group of patients.

TREATMENT SCHEDULE

GROUP 1

1. (*a*) Potassium iodide (saturated solution), 10 drops three times a day. (*b*) Thyroid gland substance (desiccated), one-half grain (0.03 Gm.), three times a day. (Given throughout period of treatment unless contraindications were noted.)

2. Typhoid bacillus vaccine: initial dose 50 million. Each additional dose was increased 50 million (this was the general rule followed). It was varied, however, in some cases, as the desired temperature of from 102 to 103 F. was obtained without increase in some subjects, and others required an increase of 75 million. This was given intravenously.

3. One cubic centimeter of a 1 per cent solution of mercuric chloride in saline solution was given intravenously at the height of temperature.

4. Quartz light (whole body exposure at 30 inch distance; first exposure, five minutes; subsequent exposures, ten minutes). This was given as soon as the temperature receded to normal after the typhoid vaccine injection.

GROUP 2

Same as group 1, except that mercuric chloride injections were omitted.

GROUP 3

In addition to treatment as outlined in group 2, these patients were given a high carbohydrate diet. During the period of increased temperature, spiritus frumenti was given.

NOTE.—By "Injection" is meant one twenty-four hour period of treatment; i. e., typhoid vaccine, quartz light and mercuric chloride in group 1, and without mercury in groups 2 and 3.

Blood for the Kahn test was taken just previous to each treatment.

* From the Barnard Free Skin and Cancer Hospital.

* These studies were carried on under a grant from the United States Public Health Service.

* Read before the Section on Dermatology and Syphilology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

* Owing to lack of space this article is abbreviated for publication in THE JOURNAL by the omission of a number of case reports. The complete article appears in the authors' reprints.

1. Engman, M. F., Sr., and McGarry, R.A.: Treatment of Certain Diseases of the Skin by the Intravenous Injection of Foreign Proteins, J. A. M. A. **67**: 1741-1745 (Dec. 9) 1916.

2. Cady, L. D.; Engman, M. F., Sr., and Elle, W. G.: Preliminary Experiments (unpublished), done under a Public Health Service grant.

3. Petersen, W. F.: Protein Therapy and Nonspecific Resistance, New York, Macmillan Company, 1922.

PROTOCOLS

GROUP 1

CASE 4.—S. M., a white man, aged 31. Secondary syphilid of one week's duration.

Treatment.—Twenty-eight injections over a period of nine months.

Serologic Course in Case 4

Date	Kahn Quantitative
12-20-27 (admission)	240 reacting units
1- 4-28	240 reacting units
1-12-28	200 reacting units
1-17-28	120 reacting units
1-26-28	40 reacting units
2-11-28	4 reacting units
4-16-28	4 reacting units
6-16-28	40 reacting units
8- 8-28	4 reacting units
8-22-28	4 reacting units
9-25-28	0 reacting units (three plus)
10-30-28	4 reacting units

Clinical Course.—During Treatment: The secondary eruption disappeared in three weeks after the beginning of treatment.

After treatment: The patient received a first course of routine antisyphilitic treatment, consisting of twenty intramuscular injections of 1 per cent mercuric chloride and two intravenous injections of arsphenamine (0.4 and 0.5 Gm., respectively). The qualitative Kahn reaction changed from four plus to negative. The patient then received two more courses, each consisting of twenty injections of mercury and one of arsphenamine (0.5 Gm.). The Kahn reaction remained negative for the remaining seven months of observation.

CASE 7.—S. N., a white man, aged 52. Secondary syphilid of two weeks' duration.

Treatment.—Nineteen injections over a period of six months.

Serologic Course in Case 7

Date	Kahn Quantitative
3- 6-28 (admission)	240 reacting units
3-29-28	80 reacting units
4-16-28	20 reacting units
5-19-28	0 reacting units (negative)
6- 7-28	0 reacting units
Discontinued treatment for two months	
8-10-28	4 reacting units
9-26-28	0 reacting units (three plus)

Clinical Course.—During Treatment: The secondary eruption disappeared before the first injection—three weeks after its appearance. The patient improved during treatment in weight, appetite and general health.

After Treatment: Patient disappeared from observation.

CASE 10.—C. S., a white man, aged 22. Secondary syphilid of one week's duration.

Treatment.—Sixteen injections over a period of four months.

Serologic Course in Case 10

Date	Kahn Quantitative
3-16-28 (admission)	240 reacting units
4- 7-28	120 reacting units
4-19-28	4 reacting units
5- 6-28	0 reacting units (negative)
6-18-28	0 reacting units (negative)
7-11-28	0 reacting units (three plus)
Period of no treatment for two months; three injections in September	
9-18-28	4 reacting units

Clinical Course.—During Treatment: The generalized macular syphilid disappeared four weeks after the treatment was started. The patient gained weight under treatment and improved generally.

After Treatment: The patient failed to report for further observation.

GROUP 2

CASE 12.—H. R., a white woman, aged 26. Secondary syphilid of one month's duration.

Treatment.—Nineteen injections over a period of six months.

Serologic Course in Case 12

Date	Kahn Quantitative
2-27-28 (admission)	160 reacting units
3-21-28	20 reacting units
4-18-28	20 reacting units
7-16-28	20 reacting units
8- 1-28	4 reacting units
9- 7-28	4 reacting units
9-25-28	4 reacting units
No injections for five weeks	
10-31-28	4 reacting units

Clinical Course.—During Treatment: The secondary eruption disappeared in one week after the beginning of treatment. General clinical improvement was satisfactory.

After Treatment: In December, 1928, three months after the last injection, the Kahn reaction was four plus. The patient was placed on routine antisyphilitic treatment. However, she did not report to the clinic regularly. In the first five months of 1929 she received only twenty injections of 1 per cent aqueous mercuric chloride, and no arsphenamine. At that time the Kahn reaction was one plus. In the next five months she received twenty injections of mercury, one of neoarsphenamine (0.6 Gm.) and one of arsphenamine (0.4 Gm.). The Kahn reaction became negative and has remained so to date (April, 1931). During the interval, the patient has received only one injection of arsphenamine (0.6 Gm.) and three courses of mercury, twenty injections per course. The patient has been clinically well during this two year period of observation and serologically well for one and a half years.

CASE 13.—G. L., a white man, aged 37. Secondary syphilid of five days' duration.

Treatment.—Nineteen injections over a period of four months.

Serologic Course in Case 13

Date	Kahn Quantitative
5-25-28 (admission)	240 reacting units
6-16-28	120 reacting units
7-11-28	80 reacting units
8-15-28	20 reacting units
9-20-28	20 reacting units
10- 9-28	4 reacting units

Clinical Course.—During Treatment: The secondary eruption disappeared three weeks after the beginning of treatment.

After Treatment: The patient received five injections of neoarsphenamine and twenty-one injections of 1 per cent aqueous mercuric chloride. The Kahn reaction became negative. From March, 1929, to March, 1931, he received practically no treatment. At the latter date the Kahn reaction was reported negative.

CASE 17.—R. G., a white man, aged 26. Primary syphilid of one month's duration.

Treatment.—Ten injections over a period of forty-five days.

Serologic Course in Case 17

Date	Kahn Quantitative
6-28-28 (admission)	0 reacting units (three plus)
7-18-28	240 reacting units
8- 8-28	4 reacting units

Clinical Course.—During Treatment: The chancre had involuted spontaneously previous to admission. The patient had no secondary eruption.

After Treatment: The patient was treated by private physicians. He did not report to the clinic for further observation.

GROUP 3

CASE 28.—F. E., a white man, aged 30. Psoriasiform syphilid of eight weeks' duration.

Treatment.—Five injections over a period of twenty-three days.

Serologic Course in Case 28

Date	Kahn Quantitative
9-14-28 (admission).....	40 reacting units
9-25-28.....	20 reacting units
10- 9-28.....	20 reacting units

Clinical Course.—During Treatment: The patient received only five injections, during which period there was a marked improvement in the skin lesions.

After Treatment: The patient reported again thirty days later, at which time the skin lesions and mucous patches were more marked. He then received one course of routine antisyphilitic treatment: twenty injections of 1 per cent aqueous mercuric chloride and four injections of arsphenamine. The Kahn reaction became negative. Subsequent to this, the patient was lost to observation.

COMMENT

An analysis of the results obtained in the treatment of these patients was somewhat difficult to evaluate. We used the quantitative Kahn procedure with dilutions up to 240 reacting units as a basis to determine serologic changes. The general clinical condition of the patient, the weight and well being, and the disappearance of specific lesions formed the basis for determining clinical behavior. On account of the procedure necessary in treating and studying each case, we were forced to limit our series to a small number, twenty-nine cases.

In an analysis of the results in the entire series of twenty-nine cases, it was found that twenty-two cases (76 per cent) showed serologic improvement. In the majority of these cases the Kahn titer dropped rapidly from 240 to 20, or 4 reacting units. In a few of the cases the qualitative Kahn reaction became two or three plus. In one case the qualitative Kahn reaction remained negative from the beginning to the end of treatment. Most of the cases, however, remained at the level of 20, or 4 reacting units, up to the end of the period of treatment.

Our cases of primary syphilis, aside from one in which the Kahn reaction remained negative throughout the period of treatment, showed a maximum Kahn quantitative titer of 4, or 20 reacting units, at a certain period following the beginning of treatment.

Seven cases (24 per cent) did not show serologic improvement. In three cases the Kahn titer remained at a level of 120 reacting units, or increased from 4 to 20 reacting units, or remained at these levels.

Clinical improvement did not always parallel serologic improvement. Of the twenty-nine cases, eighteen (62 per cent) did well clinically, while eleven cases (38 per cent) progressed unsatisfactorily. Both serologic improvement and clinical improvement were noted in sixteen cases (55 per cent). Thus, six cases (20 per cent) showed serologic but not clinical improvement, and two cases (7 per cent) showed clinical but not serologic improvement. In only five cases (17 per cent) was there neither clinical nor serologic improvement.

In analyzing the results in each of the three groups, one must bear in mind that there was an unequal amount and duration of treatment, not only in one patient as compared with another but in one group as compared with another. The first group received an average per patient of thirteen injections. The second group received an average of fourteen injections, while the third received only seven.

Group 1 consisted of eleven patients. They all improved serologically and only one case did not do well clinically. This was case 2.

Group 2 consisted of eight patients. Five cases showed serologic improvement. Four of these improved also clinically. There was clinical but not serologic improvement in two cases. Only one case did not do well either serologically or clinically.

Group 3, consisting of ten cases, received the least amount of treatment and was observed over the shortest period of time. Six cases showed serologic improvement. Only two of these showed clinical improvement also. Four cases did not show either serologic or clinical improvement.

At the end of the course of treatment, the entire group was referred to the clinic for observation and routine antisyphilitic treatment. In this clinic the routine consists of twenty intramuscular injections of a 1 per cent solution of mercuric chloride in physiologic solution of sodium chloride. Three injections are given weekly. In addition there are given in each course from one to four intravenous injections of arsphenamine (from 0.3 to 0.5 Gm.). However, twelve of the patients received no subsequent treatment. We were able to observe seven of them for a variable period of time. There was no noteworthy change in the clinical condition of any of them. Three cases (6, 8, and 11) showed serologic improvement. In four cases the Kahn titer increased (2, 3, 9 and 21). Case 5 had remained negative during treatment, but five months later the Kahn reaction was reported as four plus (120 reacting units).

Fifteen patients received subsequent antisyphilitic treatment. Of these, eight (53 per cent) gave a negative Kahn reaction after the first routine course. Following this, most of the patients were lost to observation or returned to the clinic at infrequent intervals.

3720 Washington Avenue.

ABSTRACT OF DISCUSSION

DR. J. FRANK SCHAMBERG, Philadelphia: If I understood the reader of the paper, which he presented only in part, the thesis is that by the intravenous use of typhoid vaccine combined with injections of milk, and with the use of the quartz lamp, the symptoms of early syphilis were made to disappear, and there was a pronounced influence on the Wassermann and Kahn reactions. Of course, we are all quite prepared to believe that the facts as reported are true. I was not aware of the fact that the authors employed typhoid vaccine as far back as 1916; as I recall, Renaud employed typhoid vaccine in 1911 in a number of inflammatory conditions of nontyphoidal origin. The facts are quite well established that any fever produced in a patient with dementia paralytica is prone to bring about a marked betterment or a complete remission. Malarial fever accomplishes this in at least 25 to 30 per cent of cases. It matters not what type of fever is used. Malaria is one of the easiest to control and effect a cure of, but smallpox, empyema, erysipelas or any other fever will produce the same result. The initial statement, which is also held abroad, I should dissent from, namely, that it is not the fever itself that produces cure or remission of dementia paralytica, but something else. I quite agree that the simple elevation of temperature in a rat with trypanosomiasis will not cure it, for we have proved that ourselves; but the results are different in treating rats infected with trypanosomiasis as compared with rabbit syphilis. One cannot argue that because electric heat will not cure trypanosomiasis it will not cure syphilis any more than one can argue that because bismuth does not curatively affect trypanosomiasis it will not cure syphilis. One must bear this in mind. I think

it is certain that no one can interpret at the present time what it is in the fever that brings about the result, but I believe it is the fever itself that is responsible for the improvement, for any fever therapy may be used. Indeed, Neymann and Osborne of Chicago have perfected the application of endothermy in the treatment of dementia paralytica, a method of treatment, which at the present time is producing brilliant results.

DR. CLARENCE A. NEYMANN, Chicago: I came here particularly to hear this paper, because I have been producing an elevation of temperature for several years by diathermy in the treatment of dementia paralytica. I am sorry Dr. Schamberg could not give me any hint as to why fever, or hyperpyrexia, can bring about this improvement. We have treated at the Cook County Infirmary, accidentally, two persons with primary syphilis. One went into the secondary stage and the other did not. In the production of artificial fever by diathermy we can hold the fever at 100.5 to 105 F. and we now get 66 per cent remissions in dementia paralytica, provided we give enough treatment. By that I mean from forty to fifty treatments, given biweekly. I should like to hear why the fever produces this improvement, for I came particularly for enlightenment on this point.

DR. LOUIS H. JORSTAD, St. Louis: To my knowledge there is no scientific evidence justifying the statement that fever is the only important element in the treatment of syphilis by means of typhoid injections, and the like. Fever is a manifestation of metabolic disturbances taking place in the body. However, this factor from the standpoint of the problem we wish to present is a minor one. The point we wish to emphasize is the nonspecificity of the various agents that we used in our treatment. Ewerhardt and Cady have been carrying on a long series of experiments with patients, raising their body temperature by means of diathermy, and have not had an appreciable amount of success in changing the reaction of the blood in a group of Wassermann-fast patients. We used a very small amount of treatment. There were only a few injections and this cannot be compared with a series of hot baths or keeping a patient in a diathermy circuit for a period of hours at frequent intervals over a period of months. In regard to Dr. Neymann's query, I might say that a considerable amount of chemical analysis of the blood has been done on patients under the influence of the continued hot baths, as well as the continued diathermy. There have been reported marked changes in the chemical composition of the blood following these therapies. The idea in our investigation was to study the serologic and clinical course in a series of early and latent cases of syphilis as affected by nonspecific foreign protein therapy. None of the agents we used were specific in character. Following this course of treatment all of the patients were referred to the outpatient department for routine antisyphilitic treatment and it was interesting to note that in the cases studied a small amount of treatment was necessary to cause further clinical and serologic improvement.

Effect of Derangement of Salt and Water Balance.—Perhaps the hottest place in England is about a mile under Salford, where the coal miners work in boots and bathing drawers, and empty the sweat from their boots at lunch or stopping time. One man sweated eighteen pounds in the course of a shift, and it is probable that even this figure has been exceeded. This sweat contained about an ounce of salt—twice what the average man consumes in all forms per day. The salt loss has been instinctively made up above ground by means of bacon, kippers, salted beer and the like. And as long as they did not drink more than a quart of water underground, no harm came to the miners. But a man who has sweated nearly two gallons is thirsty, and coal dust dries the throat, so this amount was often exceeded, and the excess occasionally led to appalling attacks of cramp, often in the stomach, but sometimes in the limb or back. The victims had taken much more water than was needed to adjust the salt concentration of their blood, and the diversion of blood from their kidneys to their muscles and skin was so great that they were unable to excrete the excess. Haldane, J. B. S.: Possible Worlds, New York, Harper & Brothers, 1928, p. 82, cited by Bodansky: Introduction to Physiological Chemistry, ed. 2, New York, John Wiley & Sons, p. 241.

TROPICAL RAT MITES, LIPONYSSUS BACOTI HIRST, VECTORS OF ENDEMIC TYPHUS *

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This report shows that in three instances a subclinical type of endemic typhus was transmitted from a guinea-pig to rats through bites of tropical rat mites, *Liponyssus bacoti* Hirst. It shows that in five instances the disease was transmitted from guinea-pig to guinea-pig by such mites. The evidence is based on temperatures of the animals after infected mites had fed on them and on studies of these infections in other guinea-pigs.

Studies on a human dermatitis caused by bites of tropical rat mites suggested a coincidental occurrence of cases of endemic typhus and tropical rat mites.[1] In the vicinities of Longview and Henderson, Texas, it seemed likely that these parasites were concerned in the transmission of this disease. Records were obtained of thirty-seven persons having symptoms of the disease, and in each instance their blood gave a positive Weil-Felix reaction. Twenty-three of these persons worked in establishments where foods and grains were handled. Such places were favorable for rats and tropical rat mites. At four of these locations, mites were collected and identified as *Liponyssus bacoti*. At Fort Worth and Dallas, Texas, also tropical rat mites were found in locations suspected as origins of three cases of endemic typhus fever.

Our strain of endemic typhus was obtained from a white man, J. H., aged 40, residing at Dallas, Texas. His past history was essentially negative. One month previous to his admittance into the hospital he took work as a waiter in a café at Henderson, Texas. During this period of service he experienced on the lower limbs bites which he attributed to chiggers or mosquitoes; he did not observe any mites. When the premises of this café were investigated by us, rats were obtained and found to be infested with tropical rat mites.

The patient was admitted to Baylor Hospital, Nov. 1, 1930. There was a typical prodromal period, fever, skin eruption, headaches, delirium, aches and pains over the body, and a Weil-Felix reaction in dilutions of 1:320. During the fourth to the eleventh day following the beginning of fever, the white blood cell count showed an increase from 6,000 to 17,300. On the twelfth day there was a white blood cell count of 14,900. On the eighth day following the beginning of fever, blood was drawn and 2.5 cc. was given intraperitoneally to each of two male guinea-pigs. After nine days, both pigs developed scrotal swellings. By the end of the thirteenth day following inoculation, the swelling subsided. At the autopsy of one of the animals, petechial hemorrhages were found on the surface of the testes. Also, adhesions of the parietal and visceral tunica were present. Whole blood of these animals was used in transferring the infection to other

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* From the Division of Insects Affecting Man and Animals, U. S. Bureau of Entomology, and of the Department of Dermatology, Baylor University College of Medicine.

1. Shelmire, Bedford; and Dove, W. E.: The Tropical Rat Mite, Liponyssus Bacoti Hirst, J. A. M. A. **96**: 579-584 (Feb. 21) 1931.

guinea-pigs. On the ninth day following the transfers, the latter animals exhibited similar symptoms. From them, scrapings were obtained of infected areas of the tunica vaginalis. When these were stained by Giemsa's or Castaneda's [2] methods, the presence of intracellular diplobodies was demonstrated. On the fourth or fifth day following inoculation, and when scrotal swelling first appeared, the organisms were easily found in the cytoplasm of endothelial cells. We are indebted to Dr. H. A. Kemp, Baylor University of Medicine, for assistance and confirmations of these observations.

BEHAVIOR OF STRAIN IN LABORATORY ANIMALS

Intraperitoneal inoculations of guinea-pigs were followed by febrile reactions and typical scrotal swellings. When inoculations were made some distance from the scrotum, as under the skin of the back, there was a febrile reaction but no scrotal swelling. Such pigs were later found to be immune to inoculations of our stock strain of typhus. When subcutaneous inoculations were made near the scrotum, as in the posterior portion of the abdominal wall, they resulted in fever and scrotal swellings. When injections were made subcutaneously 2 or more inches in front of the scrotum, there was apparently no localization of the infection in the tunica, and scrotal swellings were not present.

The guinea-pig receiving the initial inoculation of whole blood of man showed an incubation period of nine days. After the strain was carried through a few generations in guinea-pigs, the incubation period was reduced to four or five days.

Through the courtesy of Dr. R. R. Parker of the U. S. Public Health Service Rocky Mountain spotted fever station at Hamilton, Mont., we obtained organs of guinea-pigs infected with Rocky Mountain spotted fever. Cross immunization tests with guinea-pigs demonstrated that the disease known to us as endemic typhus fever is not identical with Rocky Mountain spotted fever.

Fig. 1.—Microtome section of a female tropical rat mite showing an infection of a muscular attachment by Rickettsia. Four days before fixation the mite fed on blood of a guinea-pig infected with endemic typhus. Alcoholic sublimate and Giemsa.

ENDEMIC TYPHUS PRODUCED EXPERIMENTALLY IN GUINEA-PIGS WITH INOCULATIONS OF CRUSHED MITES

From a cage containing a guinea-pig infected with endemic typhus and a supply of tropical rat mites, twenty-five adult female mites were obtained. They were crushed in physiologic solution of sodium chloride and injected intraperitoneally into a male guinea-pig. On the fourteenth day after inoculation, this pig developed febrile reactions and a scrotal swelling. *Rickettsia* was found in smears made from the tunica. Eight recipient pigs, receiving four inoculation generations of this strain, developed febrile reactions and scrotal swellings. The experiment demonstrated that in this instance organisms of endemic typhus were harbored by female mites. Other experiments were made to determine whether or not the infection could be transmitted through bites of tropical rat mites.

TRANSMISSION EXPERIMENTS

Mites, Guinea-Pigs and Methods Used.—From a residence located at Dallas, Texas, hundreds of tropical rat mites were collected and kept in dry tubes. Persons bitten by mites of this infestation could furnish no evidence of symptoms of endemic typhus fever. Also, tests with the mites indicated that they were free of the typhus virus.

Ten unengorged mites were emulsified in saline solution and injected intraperitoneally into two adult male guinea-pigs. During an observation period of two weeks these animals showed neither febrile reaction nor scrotal swelling. When reinoculated with tunica emulsion of our stock virus, both animals developed typical symptoms of endemic typhus fever. This experiment indicates that the mites were not infected with typhus fever.

Mites from this collection were also allowed to feed on eight fresh guinea-pigs. As none of these animals developed any evidence of endemic typhus fever, it seemed safe to consider our supply of mites noninfected.

The second time these mites were fed, they were placed on an infected guinea-pig. They took blood from a pig on the fifth day after it had been inoculated with our stock strain of the disease. At this time the guinea-pig had a scrotal swelling and a temperature of 105 F. Following this engorgement, the mites were transferred to a number of clean, dry test tubes and kept at air temperatures of approximately 70 F. The mites were now considered infected with endemic typhus. After intervals of four, seven and ten days, different mites of this lot were placed on different guinea-pigs and allowed to take meals of blood. The guinea-pigs used in these experiments had shown no fever after they had been bitten by uninfected mites. Following bites by the infected mites, the pigs were isolated and kept under observation. When their temperatures were suggestive of infection, they were killed. At autopsy, the tunica, brain or spleen was ground in a sterile mortar with physiologic solution of sodium chloride and used for inoculations of other animals. Some of the guinea-pigs receiving such inoculations were killed in order to obtain material for transferring the infections and for the demonstration of organisms. Other pigs were used in tests to determine whether or not there was a development of immunity to our stock strain.

Guinea-pigs used in our experiments were kept in separate cages and isolated with moats of water. The adult mites engorged within one to three hours and

2. Castaneda, M. R.: A New Stain for Rickettsia Bodies, J. Infect. Dis. **47**: 416-417 (Nov.) 1930.

were collected as soon as they had taken a meal of blood. The guinea-pigs did not attempt to eat the mites. When albino rats were used in these experiments, it was necessary to fit their necks with metal collars in order to prevent them from eating the mites.

Bites of Tropical Rat Mites That Did Not Furnish Evidence of Transmission of the Disease.—With both guinea-pigs and rats we encountered animals that did

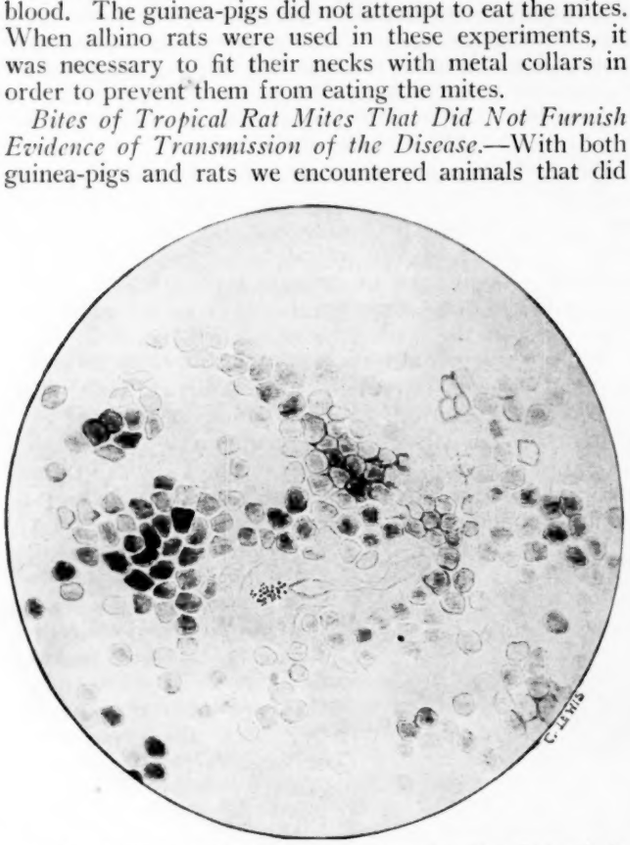

Fig. 2.—Microtome section of brain of guinea-pig. Note Rickettsia in wall of ruptured blood vessel of the parietal lobe. Fixation on the fourth day of fever, seventeen days after ten infected female tropical rat mites fed on guinea-pig. Formaldehyde and Giemsa.

not receive infections of endemic typhus through bites of tropical rat mites, or such infections were not recognized. Since three of ten rats employed in our early experimentation were found infested with tropical rat mites when purchased from a dealer, and since two rats from this series were found immune to infection with our stock strain of virus, it is possible that our negative results were occasioned by our working with rats immune in nature. With serums of rats later obtained from this source, positive Weil-Felix reactions were obtained. Investigation revealed that these animals were reared in a district where typhus had recently been reported.

Bites of Tropical Rat Mites That Transmitted a Subclinical Type of the Disease to Rats.—During other experiments we encountered three rats that gave evidence of a subclinical type of infection through bites of tropical rat mites. From these animals, tunica or spleen tissues were used in inoculating pigs. The inoculations resulted in febrile reactions and in the finding of *Rickettsia*.

After twenty infected mites took blood of a male rat, there was no abnormality in its temperature during eight days. When the rat was killed, a Weil-Felix reaction of the blood was positive in dilutions of 1:40. One twentieth of a tunica of this rat was crushed in saline solution and given intraperitoneally to a guinea-pig. Six days after the guinea-pig received this inoculation, its temperature reached 104.6 F. and there was a slight congestion of the scrotum. On the twenty-fifth day following inoculation, the pig was reinoculated with one twentieth of an infected tunica of our stock strain. This was not followed by a febrile reaction or swelling like that observed in the control pig. The guinea-pig was therefore considered an immune animal. Fourteen days after the second inoculation, this pig was again inoculated with one twentieth of an infected tunica of our stock strain. The third inoculation resulted in a febrile reaction and swelling of the left side of the scrotum. This reaction is interpreted to mean that a temporary immunity was established in the pig. The experiment is interpreted to mean, also, that infected mites transmitted a subclinical type of endemic typhus to the rat.

Infected mites were allowed to feed on a male rat for a period of twenty-four hours. The temperature of the animal did not exceed 101.4 F., and there was no evidence of scrotal swelling during the following ten days. At autopsy, a Weil-Felix test of the blood was negative in all dilutions. A tunica was crushed in physiologic solution of sodium chloride and one twentieth of it was given intraperitoneally to a male guinea-pig. On the fifth day following inoculation, the pig developed a temperature of 106.8 F. and the scrotum showed characteristic swelling. At autopsy on the eighth day following inoculation, the tunica and surface of a testicle were markedly hemorrhagic. Scrapings made for endothelial cells of the tunica vaginalis demonstrated the presence of *Rickettsia*. One twentieth of an infected tunica of this pig was crushed in physiologic solution of sodium chloride and used successfully in inoculating two other guinea-pigs. This experiment shows that a rat bitten by infected tropical rat mites may harbor the organism for at least ten days and show no symptoms of the infection.

Fig. 3.—Microtome section of testicular cord of guinea-pig showing hemorrhage and an infection by Rickettsia. This is an example of hereditary transmission of endemic typhus. The infection passed from the adult mite through the egg to its offspring. It was transmitted to a guinea-pig through bites of the larval mite. Formaldehyde, iron hematoxylin and Giemsa.

Infected mites were allowed to feed on another male rat for a period of twenty-four hours. During a period of twenty-one days the rat showed no abnormalities in temperature. At autopsy, organs were used in inoculating two guinea-pigs. Five days after these injections were made, each of the two guinea-pigs had moderate

swellings of the scrotum, and temperatures between 104 and 105.6 F. were recorded. Endothelial cells of the tunica of one of them were found to be infected with *Rickettsia*.

After sixteen days the other pig was reinoculated with our stock strain of the disease and found to be immune. The test shows that a rat may obtain a subclinical infection of endemic typhus through bites of tropical rat mites and may harbor the organism for at least twenty-one days.

Transmissions of the Disease After Periods of Four and Ten Days.—Four days after mites were allowed to

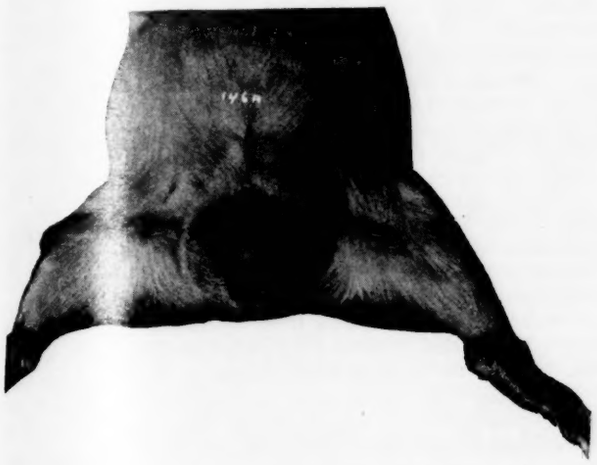

Fig. 4.—Pig 146 A at time of inoculation with emulsified organs of mite-infested rat 146.

take blood of an infected guinea-pig, two lots of seven mites each were allowed to feed respectively on two guinea-pigs. One of these animals did not develop abnormal temperatures. Crushed tunica of this animal was injected into two guinea-pigs, but it did not produce in them fever or swelling. One of the latter pigs was subsequently found to be susceptible to our stock strain of the disease.

The other pig receiving bites of the mites four days after they had fed on an infected animal developed fever. Transfers of the supposed infection to another guinea-pig resulted in fever and subsequently in immunity to our stock strain of the disease. A microtome section of one of the mites (fig. 1) shows an invasion by *Rickettsia*.

Ten days after adult mites were fed on an infected guinea-pig, seven of the mites were allowed to engorge on a "clean" guinea-pig. During twenty-nine days there was no evidence of infection. A reinoculation of the animal with our stock strain resulted in a typical infection.

Transmission of the Disease After Periods of Seven Days.—Seven days after mites had fed on the blood of an infected guinea-pig, five experiments were made with mites. In four of these tests the animals became infected with endemic typhus fever.

A pig receiving bites of six adult female mites developed fever on the ninth day. At autopsy on the eleventh day, blood was given intraperitoneally to guinea-pig 78. The latter animal developed fever, and at autopsy petechial hemorrhages were present on the upper pole of a testicle. Microtome sections made of one of these hemorrhages demonstrated the presence of *Rickettsia*. The infection was transferred to guinea-pig 87. Subsequently the symptoms and observations on this animal were comparable to those observed in guinea-pig 78.

Another transmission of the disease was obtained through the bites of six adult mites on guinea-pig 52. The animal developed a fever and was killed on the tenth day following the bites. Blood and spleen from this pig were used in inoculating guinea-pigs 72 and 73. Both of these pigs developed fever. One was subsequently found to be immune to our stock strain of the disease. The other pig was killed for material to be used in inoculating other guinea-pigs. The animals receiving inoculations from this pig developed small hemorrhages on the tunica vaginalis. Microtome sections made of an adhesion of the tunicas of one of these animals, guinea-pig 89, demonstrated the presence of *Rickettsia*.

A third experiment, made on the seventh day after mites had fed on an infected animal, demonstrated another transmission of the disease. Guinea-pig 66 was bitten by ten adult female mites. Sixteen days later it developed fever. On the seventeenth day the animal was killed and brain tissues were given intraperitoneally to guinea-pig 98 (fig. 2). By the end of the fifth day the latter animal had fever. At autopsy, small hemorrhages were found on the tunica vaginalis. A portion of the tunica was cut into microtome sections. Proliferating and swollen endothelial cells demonstrated the presence of *Rickettsia*.

Transmission of the Disease in Larvae Hatched from Eggs of Infected Mites.—Female mites engorging with blood of a guinea-pig infected with typhus were transferred to clean dry tubes and kept at 60 to 70 F. By the end of the fourth day, both larvae and eggs of mites were present. At this time the female mites were transferred to other tubes, so that the eggs and larvae remained in the original tubes. By the end of the seventh day, the original tubes contained only

Fig. 5.—Pig 146 A eight days after inoculation with emulsified organs of mite-infested rat 146.

hungry larvae. At this time fifty of the larvae were placed on guinea-pig 53. The animal developed fever. At autopsy on the eleventh day, its blood and brain were given intraperitoneally to two guinea-pigs. Both of them developed fever. One of them was found subsequently to be immune to our stock strain of the disease. Four days after the other pig (77) received crushed spleen and brain intraperitoneally, scrotal swellings were produced. At the end of four days an autopsy was performed on the animal. Microtome sections made of the cord of this animal demonstrated the presence of *Rickettsia* (fig. 3). This strain was

carried through three inoculation generations in guinea-pigs. In four different animals examined, *Rickettsia* was found in smears or sections of the tunica. In four instances, also, in two rats and two guinea-pigs, the animals receiving inoculations of this strain demonstrated that they were immune to subsequent inoculations of our stock strain.

The test demonstrates experimental transmission of endemic typhus from guinea-pig to guinea-pig through bites of tropical rat mite larvae. It demonstrates that infections may pass from female mites through their eggs to the larvae and that such larvae are capable of infecting guinea-pigs.

SUMMARY AND CONCLUSIONS

1. During a high seasonal incidence of endemic typhus in northeastern Texas, a patient having typical symptoms of the disease and a positive Weil-Felix reaction in dilutions of 1:320 furnished blood for our experimental strain of this disease.

2. Cross inoculations with a strain of Rocky Mountain spotted fever show that these are different diseases.

3. Mites and guinea-pigs were obtained from separated localities and from premises where there were no indications of typhus infection of man. Following bites of the mites there was no evidence of fever in the guinea-pigs. These mites and guinea-pigs were considered uninfected and were subsequently used in our transmission experiments.

4. Twenty-five mites engorging on the blood of a guinea-pig infected with our strain of endemic typhus were crushed in physiologic solution of sodium chloride and given intraperitoneally to another guinea-pig. The experiment resulted in infection of the latter animal.

5. Positive subclinical evidence of transmission of the disease was obtained when three male rats receiving bites from our infected supply of mites gave no clinical evidence of infection of endemic typhus. Ten and twenty-one days after the mites had bitten the rats, tissues from the rats produced experimentally the disease in guinea-pigs.

6. Four days after "clean" mites fed on the blood of a guinea-pig infected with endemic typhus, the mites fed on another guinea-pig and produced a febrile type of the disease.

7. Ten days after "clean" mites fed on a guinea-pig infected with endemic typhus, they fed on a guinea-pig, and this did not subsequently show clinical evidence of transmission.

8. Seven days after mites fed on the blood of an infected animal, four positive transmissions of endemic typhus were obtained in five tests. The disease was transmitted experimentally from guinea-pig to guinea-pig through bites of tropical rat mites.

9. Positive evidence was obtained experimentally in hereditary transmission of endemic typhus by mite larvae. The female mites engorged with blood of an infected guinea-pig. Seven days later, when eggs of these females had hatched, the young larvae fed on a "clean" guinea-pig. The guinea-pig receiving bites of the larvae developed endemic typhus.

10. In experiments reported herein, four rats and ten guinea-pigs were used in the transmission of endemic typhus through bites of tropical rat mites. Positive evidence of transmission of the disease was obtained in eight instances.

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ABSTRACT OF DISCUSSION

DR. KENNETH F. MAXCY, University, Va.: Epidemiologic considerations have indicated that the endemic typhus fever of the southeastern portion of the United States is conveyed to man by the bites of one of the rat parasites. Since the tropical rat mite (Liponyssus bacoti) is known to attack man and has been found present in many localities where cases of typhus fever were known to have occurred, it deserves careful consideration as a possible vector. So far as I am aware, Savannah, Ga., has the highest incidence of this disease of any city in the United States. In 1927, by direction of the Surgeon General of the United States Public Health Service, a careful survey was made of the parasites found on rats in Savannah. The rats were captured alive in cage traps, etherized, and carefully combed. During the month of October (a time of year when the incidence of typhus fever is maximal) only six specimens of Liponyssus bacoti were identified in the combings from 499 rats, although a special effort was made to find them. Another species of mite (Laelaps hawaiiensis) was much more common, 151 specimens being identified. This, and other considerations, led me to doubt the possibilities of the tropical rat mite as a vector. I was interested to learn a year ago that Drs. Shelmire and Dove had found this mite to be associated with cases of typhus fever in eastern Texas. Since that time, as was stated, they have been working on the experimental transmission of the disease in guinea-pigs by this mite. The final value of their experiments will depend on the accuracy of their interpretation of what constitutes a typhus fever reaction in guinea-pigs and rats. To be frank, I am not altogether satisfied that they have been sufficiently rigid in their criteria of successful infection.

DR. HANS ZINSSER, Boston: While I don't agree with the announcement of Drs. Shelmire and Dove that the organism demonstrated was a parasitic protozoan, Rickettsia, I feel that that is not very important because so little is known about the protozoans that it doesn't make much difference what they are called as long as their properties are studied. Not having seen the experimental animals, but seeing the illustrations, I should say that, while I think Dr. Maxcy is right in saying there are other criteria, such as cross immunity and brain lesions, which ought to be looked up, I think the chances that the guinea-pigs did not have typhus fever is extremely small. The guinea-pigs survived, and I should be willing to take a chance on that being correct. As far as transmission is concerned, I think that we are now dealing with an interesting possibility of variations and different alternatives, because, as is known, here is another insect that may possibly transmit from the rat to man. Deyer has found the virus in fleas, and Dr. Castaneda and I have been able to keep the virus alive in bedbugs and in three varieties of ticks; some of this work is about to be published and some of it has already been published. I think that we can bring complete confirmation now to the suggestion made by Maxcy in 1926. I think that typhus fever has a reservoir in rats because —and I am saying it not only for myself, but for my collaborators, Drs. Mooser and Castaneda—in Mexico City within the last six weeks we have found the virus in the brains of rats trapped in the Belen prison. We have trapped rats, pooled their brains, and injected the brains into guinea-pigs; and while Drs. Mooser and Castaneda are still there working over the insects on the wild rats, we are sure now that, if one has luck, typhus fever can be produced in this way. There were two guinea-pigs that reacted typically with all the possible controls made, with the exception that no brain lesions were found. The strains are both in the fourth and in the fifth generation, respectively, now, and are being further studied. In two instances, in each of which two brains from rats caught in the Belen prison were injected in the guinea-pigs, typhus fever developed on the tenth and the twelfth day, respectively. The next step is to find the insect infector.

DR. ALBERT E. ROUSSEL, Philadelphia: The last epidemic of typhus fever in this part of the world occurred in New York in 1893 and comprised 473 cases, with 200 deaths. During the fifteen years following that date, Dr. Brill of New York reported several hundred cases, presenting a syndrome which he considered original. The title of his paper was "A New Disease Which in Some Respects Resembles Typhus Fever." In 1912 Anderson and Goldberg practically proved by inocula-

tion experiments that Brill's disease was a modified form of typhus fever; and in January, 1914, I reported, in the *Maryland Medical Journal*, "Four Cases of So-Called Brill's Disease, Compared to Forty-Seven Cases of Typhus Fever, Under the Observation of the Author," with the conclusion that Brill's disease was an attenuated typhus fever. That was the last epidemic we had in Philadelphia; the forty-seven cases of typhus fever were on the other side of the street in the Philadelphia General Hospital. Dr. Brill did not accept Goldberg's experiments or subsequent clinical reports, including my own, for a number of years. In this paper, which I have in my hand, I recommended that so-called Brill's disease be reportable to the boards of health. Up to that time, nothing had been done in that respect. I am quite satisfied that the average of fifty cases that have been reported in New York City since that time represent a rather fractional percentage of the cases which exist, and I do not know how many cases are reported in Philadelphia, but many cases must be unrecognized. The last case that I had, rather curiously, was a fatal case. The fatal cases, as is known, are comparatively few. Brill reported a few. All cases, up to the case observed by me in my service at the Graduate Hospital of the University of Pennsylvania two years ago, had ended in recovery. This case proved to be Brill's disease but did not respond to the Felix-Weil agglutination test. However, that is not, after all, a specific test and, although it is supposed to be positive in about 90 per cent of the cases of typhus fever, it probably is not positive in more than 10 per cent of the attenuated form. This woman was apparently doing well when, toward the close, at which time the temperature became normal by crisis, symptoms of bronchopneumonia developed, and she died of bronchopneumonia. And in the forty-seven cases of typhus fever under observation at the Philadelphia Hospital, almost all the fatal cases were attended or caused by bronchopneumonia.

DR. HENRY PINKERTON, Boston: I have looked over the preparations which Drs. Dove and Shelmire have in their exhibit downstairs, and I am inclined to think that the morphologic pictures which they present are not those which can be accepted as the picture of typhus Rickettsia. If the organism is a protozoan it is difficult to understand why it has not been recognized as such by various other workers. The usual stain which has been used is well adapted for the demonstration of the ordinary types of Protozoa. I have obtained clear pictures of the morphology of typhus Rickettsia in sections of the guinea-pig's tunic. These results are reported in the *Journal of Experimental Medicine*. The organisms show a great deal of variation in size and in shape, and occasionally occur in long chains; but I have never seen anything that could be considered as a protozoan. Furthermore, when the organisms are tightly packed in a cell there seems to be no room about them for the type of cytoplasmic substance which Drs. Dove and Shelmire describe.

DR. WALTER E. DOVE, Charleston, S. C.: Dr. Roussel makes the interesting point that cases of endemic typhus fever are often unrecognized. Dr. Shelmire and I found such evidence in northern and eastern Texas. We found also in Texas, where tropical rat mites are quite generally distributed, that even persons bitten by the mites seldom observed them. We are of the opinion that tropical rat mites have a wide geographic distribution. We find them generally distributed in northern and eastern Texas. Specimens have been received from Memphis, Tenn., and reports of such bites have been received from St. Louis. At the National Museum, specimens have been received from points on the Atlantic Coast. More information on the distribution and incidence of this parasite is needed. It is not an easy matter to obtain specimens of tropical rat mites. They do not remain on the rats for long periods of time. The infestations usually occur in concealed places in buildings where rats find protection for themselves and their young. If one can locate the rat "nests," one has a better chance of obtaining tropical rat mites. We place such "nests" in tightly sealed paper bags and keep them until the mites are hungry. After a day or two we introduce a rat for the mites to feed on. In removing mites from rats, we have not used a combing method like that mentioned by Dr. Maxcy. We find that mites tend to cling tightly to the hair. In our experience we find it quite satisfactory to etherize the animal and the mites, and then to ruffle the hair of the rat over a piece of white paper. The stupefied mites can then be transferred to a dry tube by means of a camel's hair brush. The tropical rat mite has distinguishing characteristics and should not be confused with the common rat mite, poultry mite or mites of birds.

THE PREVENTION OF EXPERIMENTAL DUODENAL ULCER BY FEEDING NEUTRAL GASTRIC MUCIN *

M. S. KIM, M.B., M.S.
AND
A. C. IVY, PH.D., M.D.
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Fogelson [1] found that he could prepare from the gastric mucosa a neutral mucin which had a high combining power for free acid. Such a preparation has the requirements of an ideal antacid in that it does not

Fig. 1.—Two ulcers of the duodenum in a dog with biliary fistula. The larger ulcer perforated fifteen days after the biliary fistula operation.

markedly excite gastric secretion, is soothing or protective, and does not alter the body chemistry or disturb the gastro-intestinal tract. On feeding adequate quantities of this product to patients presenting peptic ulcer, Fogelson has obtained excellent preliminary results.

It occurred to us that it would be decidedly significant to ascertain whether the administration of this mucin would prevent the occurrence of ulcers in the dog, which are known to arise spontaneously following certain experimental procedures.

It has been shown that the exclusion of bile from the intestine may lead to the spontaneous development of single or multiple duodenal or gastric ulcers in the dog.

* This work was aided by a grant from the Josiah Macy, Jr., Foundation.

* From the Department of Physiology and Pharmacology, Northwestern University Medical School.

1. Fogelson, S. J.: Treatment of Peptic Ulcer with Gastric Mucin, J. A. M. A. **96**: 673 (Feb. 28) 1931.

Kapsinow [2] diverted the bile from the intestine to the kidney pelvis by a cholecystonephrostomy and observed that duodenal ulcers developed in approximately 40 per cent of the dogs. Berg and Jobling [3] found that duodenal or gastric ulcers appeared in about 60 per cent of their dogs with biliary fistulas. Ivy and Fauley [4] found duodenal ulcers in two out of twenty dogs with the common bile duct obstructed and in six out of sixty-one dogs with pancreatic ducts obstructed.

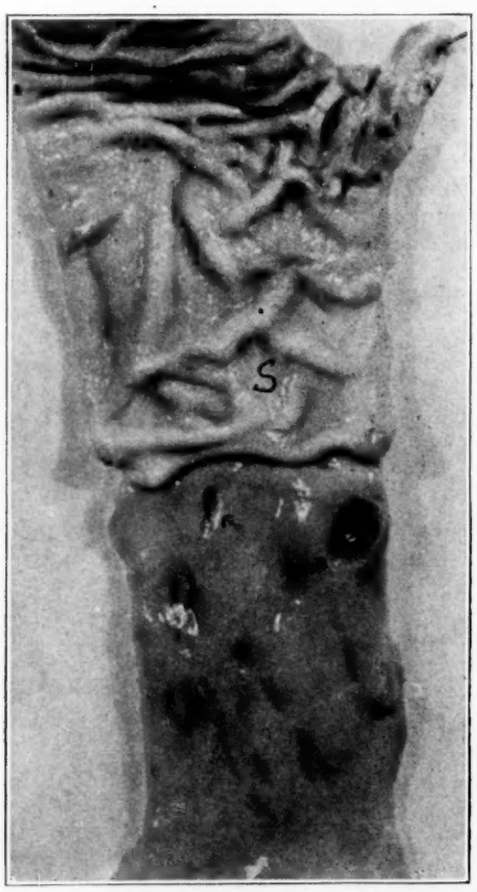

Fig. 2.—Two ulcers of the duodenum in a dog with biliary fistula, seventeen days after the operation. A section of the larger ulcer is shown in figure 3.

Why peptic ulcers should occur under these conditions cannot be stated with certainty at the present time. However, certain facts are known which have a bearing on this question. The generalized nutritional disturbances in the dog with jaundiced, biliary fistula, and in the pancreato-achylic dog are well known.[5] The exclusion of bile or pancreatic juice from the upper intestine obviously alters the normal physiology of digestion and the nutrition of the animal in two ways: (1) Digestion and absorption are incomplete, and (2) the acid chyme is not neutralized in a normal manner as it enters the duodenum. Since pancreatic juice and bile play the most important rôle in neutralizing the acid chyme (succus entericus plays only a rather minor rôle), the exclusion of either of the secretions would interfere with this process, which normally occurs in the duodenum. Although hepatic bile is frequently as alkaline as pancreatic juice,[6] the latter in toto plays a more important rôle, because more of it is secreted. However, when the common duct is occluded or when the pancreatic ducts are occluded, the incidence of ulcer in dogs is approximately the same, 10 per cent;[4] but in dogs with biliary fistula the incidence is higher, from 40 to 60 per cent. Mann and Williamson [7] transplanted the pancreatic and bile ducts to the lower portion of the ileum and observed 30 per cent of acute and 16 per cent of chronic duodenal ulcers. Ivy and Fauley [4] diverted the bile and total pancreatic juice to the lower part of the ileum and observed 10 per cent of chronic duodenal ulcers. So there apparently exists in dogs with biliary fistula some other factor than failure of neutralization of acid chyme that accounts for the higher incidence of ulcer in such animals. The relation of these procedures to gastric secretion might possibly be an important factor. Still and Carlson [8] found that chronic obstructive jaundice in the dog decreased the motor activity of the stomach and the rate of secretion but increased the acidity. Ligation of the pancreatic ducts in the experiments of Fauley and Ivy [5] decreased the emptying time of the stomach and increased the rate of secretion. No data have been reported on the effect of a biliary fistula on gastric function, but the question is being investigated. Other possible contributory factors are as follows: Berg and Jobling [3] found that environment apparently influences the incidence of ulcers following biliary fistula, since the incidence dropped from 60 to 30 per cent in their dogs when environmental conditions were improved. These authors suggest also that the effects of biliary exclusion may be to disturb the mechanism of mucous secretion. It should be pointed out that, when a biliary fistula is made by the Rous-McMaster method,[9] the presence of the cannula and tube in the bile duct may irritate the duodenum. This may explain the higher incidence of ulcer in their experiments and in ours than in those of Kapsinow,[2] in which the bile was drained into the renal pelvis.

Fig. 3.—Section through the larger ulcer shown in figure 2. Note that the ulcer is about to perforate and that the omentum is adherent in the region of the ulcer.

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In spite of the fact that the direct etiology of the ulcers following biliary fistula in dogs is unknown, we decided to use this method of ulcer production because of its simplicity.

METHOD

Under aseptic procedure a permanent biliary fistula after the method of Rous and McMaster [9] was produced in twenty-seven dogs. A cholecystectomy was performed in all. The bile was drained from the balloon twice daily. The animals were kept in single cages under the best of conditions and fed a mixture of cooked yellow corn meal, bone soup broth, and bakers' bread. The dogs fed mucin were kept under the same conditions except that the daily ration was divided into two parts, and 15 Gm. of mucin was added to each portion. One gram of the mucin used would combine with from 15 to 18 cc. of tenth normal hydrochloric acid. We etherized and killed the dogs when the bile stopped draining, when they became quite emaciated, or when we felt certain from their objective symptoms that they had an ulcer. The dogs on mucin did much better in regard to appetite and maintenance of weight, and hence they were not killed until after thirty days. Dogs 4 and 9 of the mucin series were explored at thirty days; no ulcers were found, and the incisions healed perfectly. Our dogs weighed around 25 pounds (11 Kg.).

It should be pointed out that an analysis of the feces of all these dogs showed an absence of bile, and that they secreted daily from 5 to 15 cc. of bile per kilogram. This shows that our dogs were "normal" biliary fistula dogs.

RESULTS

Among the ten control dogs which received no mucin, ulcers of the duodenum developed in six. Three of the six had two ulcers. This is an incidence of 60 per cent, as was observed by Berg and Jobling, which was a higher incidence than we had anticipated. No ulcers developed in the seventeen dogs which received mucin with their food.

Occurrence of Ulcers in Biliary Fistula Dogs With and Without Administration of Neutral Gastric Mucin

	Control Without Mucin		With Mucin	
Dog	Etherized, Days After Operation	Duodenal Ulcers	Etherized, Days After Operation	Duodenal Ulcers*
1	15	2 ulcers	28	None
2	17	2 ulcers	32	None
3	28	None	32	None
4	30	None	96	None
5	17	1 ulcer	37	None
6	18	1 ulcer	44	None
7	33	None	44	None
8	35	None	49	None
9	19	2 ulcers	116	None
10	20	1 ulcer	62	None

* The mucosa was examined for scars to ascertain whether or not an ulcer had been present which had healed. No scars were found. The other seven dogs on mucin were etherized from one to four months after the operation.

The period of observation is not too short, since our results confirm those of Berg and Jobling in that these ulcers are well developed in from twelve to sixteen days after the establishment of the fistula. A glance at the accompanying illustrations shows that penetrating, punched out ulcers can appear within a short period of time.

We were impressed especially by the fact that, on mucin, dogs with biliary fistula eat well and maintain their weight, which is not the general rule in dogs with biliary fistula. Alkalis were not used, but such work is in progress.

SUMMARY

Duodenal ulcers occurred spontaneously in six of ten dogs with biliary fistula. In seventeen biliary fistula dogs (about 25 pounds in weight) receiving 15 Gm. of neutral gastric mucin twice daily with their food, no ulcers developed. On the basis of these observations, it is concluded that the administration of the mucin prevents ulcer formation in dogs with biliary fistula.

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THE PERMEABILITY OF THE PLACENTA TO INORGANIC IODIDES *

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In recent years there has been considerable controversy among obstetricians and pediatricians as to whether or not inorganic iodides pass through the placenta and are absorbed by the thyroid of the fetus. Probably the majority of clinicians working in goiter belts have inclined to the opinion that congenital goiter is prevented by the administration of iodides throughout pregnancy. Thus it is reported that, since iodized table salt was introduced in certain areas of Switzerland in 1922, no children with congenital goiter have been born of women using the salt for at least five months of the pregnancy.[1]

Experimentally, also, considerable work has been done on this subject and some textbooks, quoting Maurice Nicloux's review of the work done up to 1905, state definitely that potassium iodide as well as many other inorganic salts readily pass through the placenta. The experiments on which this statement is based were made during the latter half of the last century by Gusserow,[2] Runge,[3] Porak,[4] Krukenberg,[5] Haidlen,[6] Cooper,[7] and others. An analysis of their work shows that while in some cases they unquestionably detected iodine in the urine of the new-born and in the amniotic fluid following the injection of large amounts into the mother during labor, only qualitative tests had been used, and their conclusions, while apparently correct, were not justified by the evidence adduced, for the difference between the concentration present normally in the body fluids and that present when moderately large quantities of potassium iodide are injected into the animal is relatively so small that no acceptable conclusions can be drawn without accurate quantitative determinations.

* From the Department of Obstetrics and Gynecology, the University of Chicago.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

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The work done since 1905 has been of a more convincing nature. In 1917, Smith [8] was able to prevent fetal myxedema by feeding the pregnant sow either 5 grains (0.3 Gm.) of sheep thyroid or 15 grains (1 Gm.) of potassium iodide daily. In this connection it may be of interest to quote the work of Courrier and Aron,[9] although the use of potassium iodide is not involved. Fresh ox and hog thyroids were fed in large quantities to dogs and guinea-pigs throughout gestation. Marked changes occurred in the mothers' thyroids, but no gross or microscopic change was observed in the thyroids of their fetuses. If administration of thyroid to the mothers was continued after delivery, and the young were permitted to nurse, a change in the thyroids of the nurslings was perceptible in a week. The conclusion drawn by these workers was that the placenta is not permeable to the thyroid hormone.

In 1896, Halstead [10] found that if most of the thyroid gland was removed before or in the early stages of pregnancy, and rigid steps were taken to exclude available iodine, the pups at birth had enlarged thyroids. In 1908, Marine [11] repeated these experiments and extended them to show that if minute doses of iodine

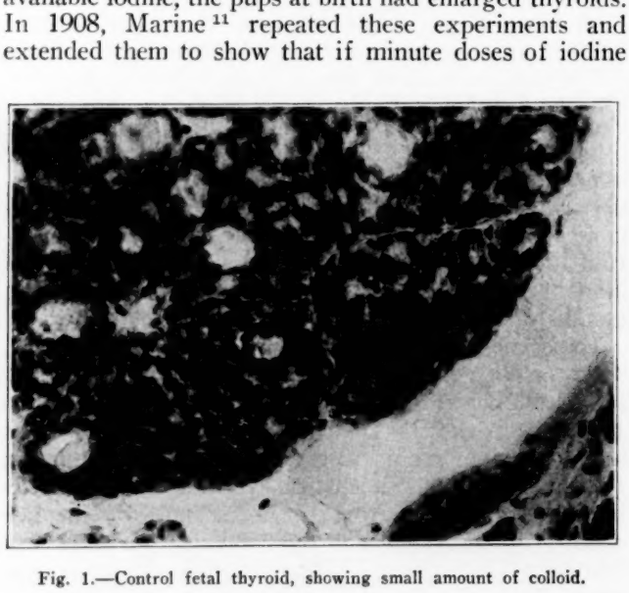

Fig. 1.—Control fetal thyroid, showing small amount of colloid.

were given to a pregnant bitch which had three fourths of her thyroid gland removed the puppies at birth had normal thyroids.

As to the amount of iodine present in the fetal thyroid at birth, Marine and Lenhart say: [12]

> In puppies whose mothers have been fed iodine we detected it in glands at birth in all cases, while we have not detected any iodine in the thyroids of puppies whose mothers had not been fed iodine during pregnancy. Nagel and Roos have recorded similar observations. Hunt and Seidell from the results of their examinations and experiments favor the view that iodine is not uncommonly absent at birth and that the protection which such thyroids offer to mice against acetoniril poisoning may be due to some other constituent of the protein. From the above references to recorded observations it is seen that iodine to the extent of mere traces has not been found in most cases. However, findings negative to the tests at present in use do not mean that iodine was altogether absent, and before it can be said that iodine is normally absent at birth more accurate methods of iodine determination must be devised.

The method then in use was the older colorimetric method not accurate to more than 0.05 mg. Since then a number of good methods have been devised, the best probably being those of Kendall,[13] McClendon [14] and von Fellenberg.[15] Kendall's is accurate to 0.005 mg. and both McClendon's and von Fellenberg's to 0.001 mg.

I elected to use Leitch and Henderson's modifications [16] of the von Fellenberg method, and was able to demonstrate the presence of iodine in the thyroids of all fetuses whether their mothers had been given potassium iodide or not.

The animal chosen for this work was the rabbit, partly because of its short period of gestation, twenty-eight days, and partly because, given suitable conditions as to food, temperature and environment, it will breed at all times of the year. The animals were divided into two groups: control and experimental. The two groups were given the same food and water, and the experimental animals received in addition a definite amount of potassium iodide daily. Very careful precautions were taken that the control animals should not be influenced by iodine from any other source than their food. The rabbits were given food and water twice a day. The water was triple distilled. The food obtained from a goiter belt consisted of oats, wheat middlings, carrots with their skins, and cabbage. The amount of iodine in these foodstuffs in γ per hundred grams of food is as follows: oats, 1; [17] wheat middlings, not known; carrots, 0.23; [17] cabbage, 0.6.[18] The amount eaten daily by each animal was not determined, but the amount of iodine it contained must have been small when one considers that 1 mg. = 1,000 γ. Small as these quantities were, however, they were almost, if not quite, sufficient to meet physiologic requirements, as shown by the fact that the average percentage of iodine obtained from the thyroids of the control adults was 0.011 mg. per hundred milligrams, while the normal average given is 0.016 mg. per hundred milligrams.[18]

Pregnancies were rare both in the control and in the experimental groups while they were continually confined to their cages. As soon, however, as they were permitted to play around in the open air a few hours a day they seemed to become impregnated with relative ease.

One important difficulty encountered was the tendency of the rabbits to eat their young. In some cases a whole litter of from eight to ten rabbits was eaten within an hour of birth; and there were very few litters, indeed, in which some of the young had not been destroyed, until I borrowed the idea of the obstetric cage from Evans and Long.[19]

The mothers were killed immediately after delivery and their young immediately after birth. The thyroids were at once removed, those of the fetuses under a dissecting microscope. As the average weight of a lobe of

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fetal thyroid is about 5 mg. and many lobes weighed much less, the technical difficulty experienced in dissecting them free from surrounding structures was at first considerable. The thyroids were weighed as soon as dissected. At first the chemical balance was tried, but the absolute weight, especially of the fetal thyroid, was so small that the loss of weight from desiccation in the short period of two or three minutes was very considerable. A torsion balance weighing as much as 50 mg. with an accuracy of ± 0.02 mg. was therefore secured and was found to be very satisfactory.

TABLE 1.—*Fetuses*

Number of Lobes		Total Weight of Lobes, Mg.		Average Weight per Lobe, Mg.		γI_2 per 100 Mg. Thyroid		Mg. of I_2 to Experimental Mother
Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental	
6	6	12.6	41.0	2.1	6.8	12	22	20
5	10	8.4	61.1	1.7	6.1	14	24	20
12	7	39.2	45.0	3.3	6.4	13	22	100
8	6	54.4	43.4	6.8	7.2	14	26	100
10	12	50.3	69.6	5.0	5.8	15	27	100
14	8	39.9	31.6	2.8	3.9	14	27	100
6	8	27.5	28.1	4.6	3.5	10	29	100
8	10	35.3	76.9	4.4	7.7	9	29	200
69	67	267.6	396.7	30.7	47.4	101	206	
Mean				3.8	5.9	12.60	25.7	
Standard error of mean				0.6	0.5	0.76	1.0	
Mean + (3.35 × S.E. of mean)				5.8		15.10		
Mean − (3.35 × S.E. of mean)					4.2		22.3	

As will be seen from the accompanying tables, the amount of potassium iodide given to each rabbit varied from 20 to 200 mg. a day. The iodide was very thoroughly mixed with starch to give bulk, and was given to the animals in number 4 gelatin capsules. As previously stated, the iodine determinations were made by Leitch and Henderson's modification of the von Fellenberg method, which, in general, is as follows:

To about 50 mg. of thyroid tissue placed in a nickel crucible, approximately 1.5 cc. of 40 per cent potassium hydroxide is added to protect the iodine while the carbon is being oxidized. Oxidation is carried out by first heating the material over a Chaddock burner for about twenty minutes; then, if particles

TABLE 2.—*Mothers*

Weight of Animal, Gm.		Total Weight of Lobes, Mg.		Average Weight per Lobe, Mg.		γI_2 per 100 Mg. of Thyroid		Mg. of I_2 to Experimental Mother
Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental	
2,837	3,518	142.5	286.0	71.2	143.0	7	34	20
2,724	2,043	138.0	167.0	69.0	83.5	12	26	20
2,837	2,951	149.0	232.0	79.5	116.0	14	75	100
3,518	2,497	161.0	131.5	80.5	65.7	8	101	100
3,291	2,610	202.6	122.0	101.3	61.0	12	142	100
3,064	2,383	154.8	179.3	77.4	89.6	13	142	100
2,497	2,951	124.0	212.5	62.0	106.2	9	136	100
3,064	3,064	141.6	393.2	70.8	196.6	13	165	200
23,832	22,017	1213.5	1723.5	611.7	861.6	88	821	
Mean				76.4	107.7	11.00	102.6	
Standard error of mean				4.1	15.8	0.92	20.9	
Mean + (3.35 × S.E. of mean)				90.1		14.08		
Mean − (3.35 × S.E. of mean)					54.7		32.6	

of carbon are still present, small amounts of 10 per cent potassium nitrate are added, and the solution is filtered. After slow evaporation of the filtrate, the ash is extracted with 95 per cent alcohol. This solution is filtered, the filtrate is evaporated to dryness on a water bath, and the salt so obtained is dissolved in a few cubic centimeters of distilled water.

The iodine of the original thyroid tissue is present in this solution in the form of KI according to the chemical reaction:

$$I_2 + 2KOH = KI + H_2O + O$$

With methyl orange as an indicator, the solution is now acidified with $2N\text{-}H_2SO_4$ when the following reaction takes place:

$$2KI + H_2SO_4 = K_2SO_4 + 2HI$$

A saturated solution of bromine is then added to oxidize the hydriodic acid to iodic acid thus:

$$HI + 6Br + 3H_2O = HIO_3 + 6HBr$$

After the iodine is concentrated by evaporation of this solution to 2 cc., potassium iodide is added to liberate more hydriodic acid:

$$2KI + H_2SO_4 = K_2SO_4 + 2HI$$

Finally the reaction between hydriodic acid and iodic acid gives the free iodine to be titrated:

$$5HI + HIO_3 = 3H_2O + 6I$$

With 1 per cent starch solution as an indicator, the iodine is titrated against five-hundredth normal sodium thiosulphate solution from a titration buret graduated to 0.001 cc.

However experienced one may be in the technic of quantitative analysis, considerable practice with this method will probably be necessary before accurate results are obtained.

Final results are shown in the tables. All I proposed to show by this experiment was whether or not inorganic iodides passed through the placenta and reached the thyroid of the fetus. That they did so is clearly evident from an analysis of table 1. From sixty-seven lobes of the eight litters born of experimental animals, the iodine obtained varied from 22 to 29 γ, or an average of 25.7 γ per hundred milligrams of tissue. From sixty-nine lobes of eight control litters there was a variation of from 9 to 15 γ, or an average of 12.6 γ per hundred milligrams.

Fig. 2.—Experimental fetal thyroid, showing acini well distended with colloid.

Because of the variation in the amount of iodine obtained from the thyroids of the different litters, the standard error of the mean should be taken into consideration. This amounts to ± 0.76 γ for the control group and ± 1.00 γ for the experimental group. If these errors are each multiplied by 3.35, the true mean becomes 12.6 ± 2.55 γ group, in ninety-nine out of a hundred of such groups. Thus it is seen that the difference found is really significant.

Results of the determination of the iodine content of the maternal thyroids are given in table 2. In the control group the iodine varied from 7 γ to 14 γ, giving an average of 11 γ per hundred milligrams of thyroid, while in the experimental group the extremes were 34 γ and 165 γ with an average of 102.6 γ per hundred milligrams. The standard error of the mean

for the control group is ± 0.92 γ and for the experimental group 20.9 γ. If these errors are each multiplied by 3.35 the true mean becomes 11 ± 3.08 γ for the control groups and 102.6 ± 70.01 for the experimental groups in ninety-nine out of a hundred of such groups. In this connection it should be explained that the high standard error of the mean for the experimental maternal group is for the most part due to the widely different doses of potassium iodide given daily to the different animals in this group. Further examination of table 2 shows that there is a considerable difference in the iodine content of the experimental maternal thyroids when the same amount of potassium iodide is given. This is not surprising when one considers the rapid rate at which iodides are absorbed and excreted and the fact that the amount retained by the body seems to differ in different individuals.

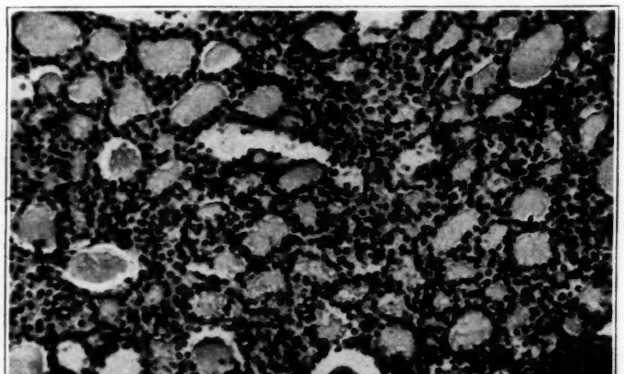

Fig. 3.—Control maternal thyroid, showing small amount of colloid.

Table 3 shows that the amount of iodine absorbed by the thyroids of the experimental mothers depends to some extent on the amount administered, while the amount absorbed by the thyroids of their fetuses remains practically constant whether 20 or 200 mg. is given daily. Whether this is due to limited ability on the part of the fetal thyroids to absorb iodine or on the part of the placenta to allow iodides to pass can at present only be surmised.

TABLE 3.—*Amount of Iodine Absorbed by Mothers and Fetuses*

Mg. KI to Experimental Mother Daily	γI_2 per 100 Mg. Thyroid	
	Experimental Mothers	Experimental Fetuses
20	34	22
20	26	24
100	75	22
100	101	26
100	142	27
100	142	27
100	136	29
200	165	29

It may be of interest also to note whether thyroid tissue increases in weight with increase in the amount of its iodine content. Table 4 shows that while approximately 24,000 Gm. of control animal tissue yields 1,200 mg. of thyroid, 23,000 Gm. of experimental animal tissue yields 1,700 mg. of thyroid. So, in table 1, approximately the same number of lobes (representing approximately the same amount of animal tissue) weighed 268 mg. in the control group and 397 mg. in the experimental group. This seems to be a sufficiently definite increase. However, if one takes into account the standard error of mean and applies it to a large series, there will be no significant difference between the mean of the control and that of the experimental group in the case of either the mothers or their fetuses.

Histologic studies confirm the biochemical observations. It was first shown by Oswald [20] and later by Marine [21] and many others that the iodine content of the normal thyroid gland varies in general with the amount of stainable colloid. I have placed side by side sections of control and experimental thyroids representing both the maternal and the fetal groups. The excess of colloid in photomicrographs 2 and 4 over that in photomicrographs 1 and 3 is at once apparent.

TABLE 4.—*Comparative Yield of Thyroid from Control and Experimental Tissues*

Mothers				Fetuses			
Weight of Animal, Gm.		Total Weight of Lobes, Mg.		Number of Lobes		Total Weight of Lobes, Mg.	
Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental
2,837	3,518	142.5	286.0	6	6	12.6	41.0
2,724	2,043	138.0	167.0	5	10	8.4	61.1
2,837	2,951	149.0	232.0	12	7	30.2	45.0
3,518	2,497	161.0	131.5	8	6	54.4	43.4
3,291	2,610	202.6	122.0	10	12	50.3	69.6
3,064	2,383	154.8	179.3	14	8	39.9	31.6
2,497	2,951	124.0	212.5	6	8	27.5	28.1
3,064	3,064	141.6	393.2	8	10	35.3	76.9
23,832	22,017	1213.5	1723.5	69	67	267.6	396.7

SUMMARY AND CONCLUSIONS

1. Inorganic iodides, given to the mother, pass through the placenta and are absorbed by the thyroid of the fetus.

2. The thyroids of mothers on a low iodine diet contain an average of 11 γ of iodine per hundred milligrams of tissue.

3. The thyroids of mothers who are given 100 mg. of potassium iodide daily, in addition to a low iodine diet, contain an average of 127 γ per hundred milligrams of tissue.

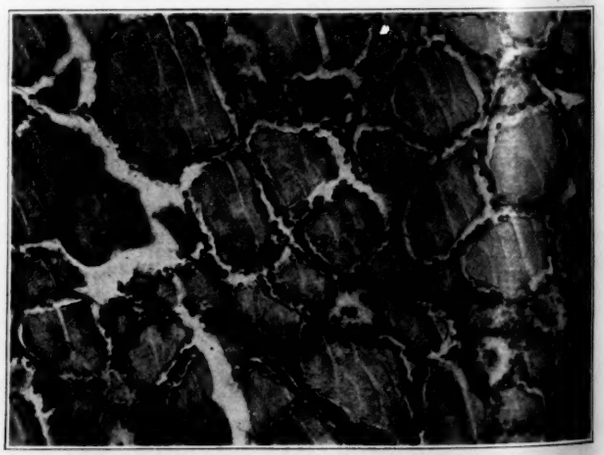

Fig. 4.—Experimental maternal thyroid, showing acini markedly distended with colloid.

4. The thyroids of fetuses whose mothers have received a low iodine diet yield an average of approximately 13 γ of iodine per hundred milligrams of tissue.

5. The thyroids of fetuses whose mothers have been given large amounts of potassium iodide in addition to

20. Oswald, A.: Ueber den Jodgebalt der Schilddrüse, Ztschr. f. Phys. **23**: 265, 1897.

21. Marine, David: The Present Status of the Functions of the Thyroid Gland, Physiol. Rev. **2**: 521-551 (Oct.) 1922.

the iodine contained in their diet yield an average of approximately 26 γ of iodine per hundred milligrams of tissue.

6. The amount of iodine obtained from the maternal thyroid of animals receiving potassium iodide seems to vary with the amount given.

7. The amount of iodine obtained from the fetal thyroid varied little whether 20 mg. or 200 mg. of potassium iodide was given the mother daily.

8. There seems to be no significant increase in the weight of thyroid tissue, with increase in its iodine content.

9. If a child with congenital goiter is born of a mother who has received inorganic iodides throughout her pregnancy, it is not because of a deficiency of iodine in the fetal thyroid.

University Hospital.

ABSTRACT OF DISCUSSION

DR. FRED L. ADAIR, Chicago: It has been known for a long time that the administration of iodine to the mother seems to influence the incidence of goiter developing in the subsequent offspring. However, it seemed worth while to demonstrate whether or not the placenta was permeable to iodine, whether or not the influence of this iodine could be traced to the thyroid, and whether the iodine which went through had to be administered to the mother in the organic or the inorganic form. One cannot draw too rigid conclusions from rabbits for application to human beings, but the fact that inorganic iodine when administered to the mother goes through the placenta to the fetus and can be demonstrated in the fetal thyroid, both chemically and morphologically from its effect on the distribution of the colloid, seems to be fairly conclusive evidence that the administration of inorganic iodine may have and probably does have some effect on the development of the thyroid in the fetus.

ADVANTAGES OF INTUBATION METHOD OF INTRODUCING IODIZED OIL FOR BRONCHOGRAPHY IN CHILDREN*

SAMUEL IGLAUER, M.D.

CINCINNATI

The practice of introducing radiopaque substances into the bronchi for diagnostic purposes is now thoroughly established. This is particularly true in the case of adults, but bronchography has not been so generally adopted in children, chiefly because of the difficulty in obtaining the cooperation of these young patients. While the ordinary roentgenogram of the chest is of great diagnostic value, there are many lesions that can be visualized with much greater certainty and clarity after the introduction of opaque substances. The best medium for this purpose is iodized poppy-seed oil 40 per cent (lipiodol), since it is practically nontoxic, easily manipulated, and very opaque to the x-rays. The value of bronchography is demonstrated particularly in cases of bronchiectasis. The opaque oil not only renders the cavities visible but also shows their approximate shape, number, size and distribution.

There can be no doubt that bronchography should be employed more frequently in children, since numerous observers in recent years have shown that many chronic pulmonary diseases, particularly bronchitis, pneumonitis, bronchiectasis and lung abscess, very often originate during the early years of life.

Lemon [1] reports that, in a series of 15,500 children examined during a five year period at the Mayo Clinic, a diagnosis of bronchiectasis was made in 63 cases. In this series, whooping cough, influenza, measles and pneumonia were common precursors and acted either separately or in combination as etiologic factors in the production of the ectasia. Infections of the upper respiratory tract were very common in this series, and in fourteen instances such infections had preceded the damage to the bronchi. Lemon is of the opinion that disease of the accessory sinuses may be the cause or the result of bronchiectasis.

In a series of forty-five cases of chronic pneumonia and bronchiectasis recorded by Clark, Hadley and Chaplin,[2] 82 per cent had their origin before the eighth year of life. From the five year records of two Philadelphia hospitals, Thorpe [3] collected fifty-three cases of bronchiectasis in children under 13 years of age. "Disease of the accessory sinuses was thought to be a concomitant factor in maintaining a state of sepsis" in many of these cases. Reichle [4] reports fourteen cases of bronchiectasis in children treated in a single Cleveland hospital during a two and a half year period. Since 1924, Findlay and Graham [5] have practiced intratracheal injections of opaque oil in bronchiectatic children and have followed the course of thirty-two patients, of whom twelve have died and three have recovered completely. By repeated bronchographies in fourteen cases, they have been enabled to make interesting studies of the progress of the disease.

From these citations it is apparent that early diagnosis is of great importance if any marked progress is to be made in the treatment of nontuberculous pulmonary infections, and that bronchography affords a definite means of establishing such a diagnosis both in adults and in children. Since the injection of iodized oil is practically free from danger or serious aftereffects, it should be employed more frequently in obscure and doubtful cases. In this connection the work of Ochsner [6] may be cited. He reports that he has injected the bronchi for diagnostic or therapeutic purposes in more than 1,500 instances without any untoward reactions.

Bronchography is contraindicated in the presence of high fever, dyspnea or recent hemoptysis, in cardiac decompensation and in cachectic individuals. There is still some question as to the effect of iodized oil on the tuberculous lung, as there seems to be some danger of the iodine activating the lesions. I [7] discussed this phase of the subject at some length in a paper published in 1927, and in a subsequent paper Kuhn and I [8] recommend the use of a brominized oil, bromipin, if bronchography is to be practiced on a tuberculous patient or suspect. In this connection it should be stated that a common error is to mistake many nontuberculous

* From the Department of Oto-Laryngology, University of Cincinnati College of Medicine.

* Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

1. Lemon, W. S.: M. Clin. North America **10:** 531 (Nov.) 1926.
2. Clark, A.; Hadley, W. J., and Chaplin, A., quoted by Findlay and Graham (footnote 13).
3. Thorpe, E. S., Jr.; Chronic Bronchiectasis in Childhood with Observations on Early Diagnosis, Am. J. M. Sc. **177:** 759-767 (June) 1929.
4. Reichle, H. S.: Bronchiectasis in Childhood, Ohio State M. J. **25:** 357-362 (May) 1929.
5. Findlay, Leonard; and Graham, Stanley: Prognosis in Bronchiectasis, Arch. Dis. Childhood **6:** 1-10 (Feb.) 1931.
6. Ochsner, Alton: Bronchiectasis, Am. J. M. Sc. **179:** 388-405 (March) 1930.
7. Iglauer, Samuel: Use of Iodized Oil in the Diagnosis of Pulmonary Lesions, Surg. Gynec. Obst. **42:** 82-87 (July) 1927.
8. Iglauer, Samuel; and Kuhn, Hugh: Advantages of Brominized Oil in Bronchography in Tuberculous Patients, J. A. M. A. **90:** 1278-1281 (April 21) 1928.

cases for tuberculosis, and Hamilton [9] estimates that at least 25 per cent of all patients admitted to tuberculosis sanatoriums are nontuberculous.

VARIOUS METHODS OF INTRODUCING OPAQUE OIL INTO THE BRONCHI OF CHILDREN

Preparation.—On the evening and morning preceding the bronchography, the child should be given postural drainage in order to enable him to expel as much secretion as possible. Breakfast should be omitted. An appropriate dose of codeine and atropine should be administered hypodermically about one hour before the operation.

There are four methods available for bronchography in children, as follows: (1) puncture through the cricothyroid membrane; (2) introduction of a catheter through the glottis; (3) the bronchoscopic method, and (4) the intubation method.

Cricothyroid Puncture.—Cricothyroid puncture as a preliminary to bronchography was first practiced in adults by Sicard and Forestier [10] in 1923 and subsequently was applied to children by Sergent and Cottenot.[11] In France and England it still remains the favorite procedure. The overlying skin and the cricothyroid membrane are infiltrated with a solution of procaine hydrochloride, and a curved trocar and cannula [12] resembling a miniature tracheotomy tube is then forced through the membrane into the larynx. The escape of air through the cannula indicates that the instrument is in proper position. A few cubic centimeters of a procaine solution (3 per cent) is then injected through the cannula into the trachea to anesthetize the mucous membrane and check the cough reflex. This is followed by the injection of the oil. Findlay and Graham [13] recommend the use of general anesthesia in children before making the puncture, since it is difficult to prevent young subjects from swallowing, and this interferes with the puncture.

Fig. 1.—Patient with intubation tube in situ and syringe, containing iodized oil, attached to a rubber tube projecting from the mouth.

Excellent roentgenograms are obtained by the puncture method, but it is open to serious objections owing to the possible complications, such as subcutaneous emphysema, or the escape of some of the oil into the pretracheal cellular tissues.[12] I have personal knowledge of an injection by an expert in which all the oil was deposited in the neck and the mediastinum. The patient developed a cyst at the site of the puncture and also a perichondritis. Recovery took place after several months. Negus [14] reported a fatal case of mediastinitis after cricothyroid puncture. Owing to the dangers of this method, it should be discarded in favor of some simpler procedure.

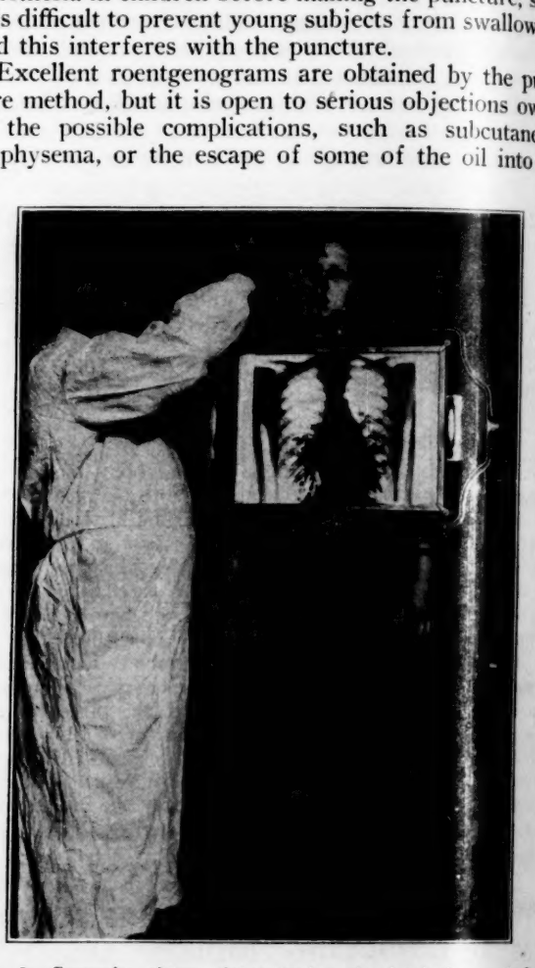

Fig. 2.—Composite picture demonstrating the intubation method of intrabronchial injection behind the fluoroscopic screen.

The Catheter Method.—This method consists in introducing a flexible catheter through the cocainized larynx. This method is employed by Sgalitzer,[15] Haslinger,[16] Myerson,[17] Reichle,[4] Stitt [18] and others. The simplicity of this technic recommends it, and it can readily be carried out in adults. However, the procedure is more difficult in children, who may not permit the cocainization or who may pull out the catheter, which is not self-retaining unless the patient holds it

9. Hamilton, W. F.: Nontuberculous Pulmonary Disease, Arch. Surg. **14**: 218 (Jan.) 1927.
10. Sicard, H., and Forestier, I.: Methode générale d'exploration radiologique par l'huile iodée (lipiodol), Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 463 (March 17) 1922; l'huile iodée en clinique; applications therapeutiques et diagnostiques, ibid. **47**: 309 (Feb. 23) 1923.
11. Sergent, E., and Cottenot, P.: L'étude radiologique l'arbre tracheobronchique au moyen des injections intratracheales de lipiodol, Bull. et mém. Soc. méd. d. hôp. de Paris **47**: 693 (May 11) 1923.
12. Armand-Delille, Pierre; and Gelston, C. F.: Diagnosis of Dilation of Bronchi in Children by Means of Injection of Iodinized Oil, Am. J. Dis. Child. **28**: 527-548 (Nov.) 1924.
13. Findlay, Leonard; and Graham, Stanley: Bronchiectasis in Childhood, Arch. Dis. Childhood **2**: 71-96 (April) 1927.
14. Negus, V. E.: Chronic Nontuberculous Infections of the Lungs (symposium), Proc. Roy. Soc. Med. **20**: 749, 1927.
15. Sgalitzer, M., and Beck, O.: Zur Bronchographie mittels Larynx-Katheters, Ztschr. f. Hals-, Nasen- u. Ohrenh. **14**: 8 (Jan. 26) 1926; Ztschr. f. Chir. **52**: 1537-1541 (July 11) 1925.
16. Haslinger, F., in discussion: München. med. Wchnschr., April 9, 1925, p. 422.
17. Myerson, M. C.: An Introducer for Lipiodol in Lung Mapping, Am. J. Roentgenol. **22**: 69-71 (July) 1929.
18. Stitt, H. L.: Bronchial Aspiration and Irrigation with a Hypertonic Saline Solution, J. Med. **8**: 112 (May) 1927.

between his teeth. As will be described later, it is advisable to inject the bronchi under the guidance of the fluoroscope. This procedure is difficult to accomplish in a darkened room with a restless, uncooperative child unless one employs some sort of self-retaining cannula.

The Bronchoscopic Method.—In this method a bronchoscope is introduced in the usual manner, without anesthesia. Any secretion that is present is then aspirated from the lung, and the bronchi are thoroughly inspected. A local anesthetic should be applied to the bronchial mucosa. A long cannula is then inserted through the bronchoscope, and the opaque oil is injected into the diseased lung field. The bronchoscopic method is very precise and accurate and has the advantage of permitting the removal of the secretions and the taking of cultures as well as direct inspection. The bronchoscopic method should, of course, be preferred if the history points to the presence of a foreign body. It cannot, however, be employed without the aid of a trained corps of assistants, and cannot readily be combined with fluoroscopy, since it is difficult to place a patient in the proper posture with a bronchoscope in situ. If the bronchoscope is removed prior to the taking of the roentgenogram, the patient is almost certain to cough as the instrument is withdrawn, and coughing tends to scatter the oil within the lung, which does not improve the roentgenogram.

Fig. 3.—Injected normal tracheobronchial tree in a child, aged 4 years. (Some iodized oil is also seen in the esophagus and stomach.)

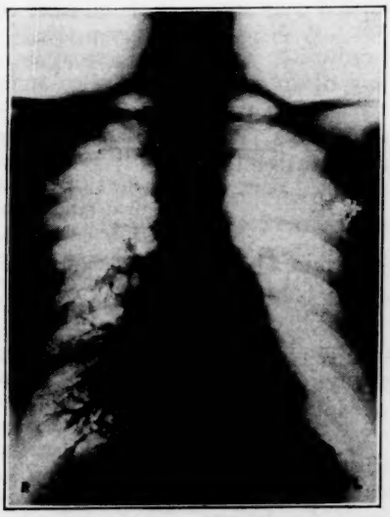

Fig. 4.—Cylindric bronchiectasis on the right side and saccular bronchiectasis on the left, in a girl, aged 13 years. Intubation tube in position.

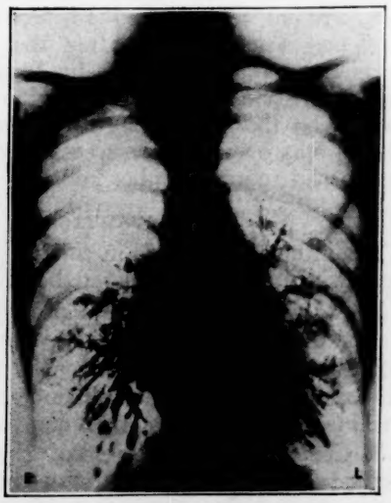

Fig. 5.—Combined cylindric and saccular bronchiectasis on the right side with cylindric bronchiectasis on the left in a girl, aged 13 years.

For these reasons it seems advisable to me to regard bronchoscopy and bronchography as two separate diagnostic procedures. If bronchography by some simpler technic reveals pathologic changes in the lungs, bronchoscopy may then be employed to permit of direct inspection and treatment of the tracheobronchial tree.

The Intubation Method.—In this method a modified, all-metal O'Dwyer intubation tube is used. Briefly stated, the modification consists in the addition of a second small bore tube soldered into a longitudinal groove in the posterior wall of the original intubation tube, thus creating a double-barreled tube, with one channel to provide for breathing and a second channel to convey the oil. A piece of soft rubber tubing about 8 inches (20 cm.) long (to protrude from the mouth) is attached to the upper end of the oil channel, which terminates in a curved prolongation at the lower end of the original O'Dwyer tube. Tubes of different sizes are graded according to the age of the child, although one size suffices for most adults. A more complete description of the intubation tube can be found in my original article [19] published in 1926. Recently Baisch [20] in Germany has brought out an intubation tube constructed fundamentally on the same principle.

TECHNIC

The patient is properly prepared, as previously described. In older children as in adults a cocaine solution (10 per cent), to which a few drops of epinephrine have been added, is applied to the interior of the larynx. In younger children no anesthetic is employed, although Baisch recommends general anesthesia with ethyl chloride in some cases. If the older child will cooperate, the intubation tube is now inserted under the guidance of the laryngeal mirror, but the uncooperative and the younger child must be held in the nurse's lap while a mouth gag is inserted and held in place by an assistant. The intubation tube is then introduced by touch in precisely the same manner as for the relief of laryngeal diphtheria. When the tube is in place, the rubber tube protrudes from the mouth, and the child must be prevented from pulling it out. After a few minutes the patient usually becomes accustomed to the tube and will not resent its presence (figs. 1 and 2).

In order to obtund the cough reflex, about 4 cc. of a procaine solution (from 1 to 2 per cent) is then slowly injected through the rubber tubing into the trachea and bronchi. (Recently I have been using a nupercaine solution in preference to the procaine.) The patient is now ready for the oil injection. The oil, slightly warmed, is placed in a glass syringe, which, in turn, is attached to the rubber tube. The patient, preferably in the upright position, is then placed behind the fluoroscopic screen, and the flow of the oil as it enters the bronchi is observed by the roentgenologist. By inclining the patient's trunk or by placing him on his side,

19. Iglauer, Samuel: Use of Injected Iodized Oil in Roentgen-Ray Diagnosis of Laryngeal, Tracheal and Bronchopulmonary Conditions, J. A. M. A. **86**: 1879-1883 (June 19) 1926.

20. Baisch, Albrecht: Doppelläufige Kehlkopftuben für Lungenfüllungen zu diagnostischen und therapeutischen Zwecken, Deutsche med. Wchnschr. **28**: 1166 (July 11) 1930.

the direction of the flow is controlled by gravity so that any desired lung field may be injected.

A diagnosis can frequently be made during the fluoroscopy. In order to obtain the most perfect pictures, the injection of any alveoli should be avoided. From 10 to 20 cc. of iodized oil is usually sufficient to delineate the bronchi in children, although more oil may be required if large cavities are present.

The roentgenograms are then immediately taken, with the patient in either the upright or the horizontal position (figs. 3, 4 and 5). At times it is advisable to take the pictures in both positions in order to demonstrate changeable fluid levels. Stereograms and lateral views may also be taken but, owing to superimposition, the lateral view is confusing if both lungs have been injected.

It is advisable not to remove the intubation tube before the films are made, since the extraction of the tube excites a cough reflex which tends to scatter the oil within the lungs.

I have employed the intubation method on several hundred adults and on a limited number of children, and, with one exception, no bad results which could be attributed to the intubation have been observed. In one case, that of a girl aged 13, a peritracheal abscess developed several days after the procedure. This complication may have been due to the use of an oversized intubation tube or to a bronchoscopy which I performed on the second day after the intubation. The abscess was opened and successfully drained after the patient had returned to her home.

ADVANTAGES

The intubation method in children has certain advantages which may be enumerated as follows:

1. It is a simple and safe procedure which can be carried out in the office as well as in a hospital.

2. It can be used in children by any physician who has mastered the art of intubation and does not require a trained corps of assistants.

3. Combined with fluoroscopy, it affords a visual method of bronchography with the entire lung field under observation during the injection. Confusing injection of the alveoli can be minimized or avoided and sharp images can be obtained.

4. A diagnosis can frequently be made during the fluoroscopy.

SUMMARY AND CONCLUSIONS

1. The injection of iodized poppy-seed oil into the bronchi clearly demonstrates many lesions which are obscure in the ordinary roentgenogram.

2. Studies in recent years have demonstrated that many chronic pulmonary diseases begin during childhood.

3. Early diagnosis is of great importance if any marked progress is to be made in the treatment of nontuberculous pulmonary infections in children.

4. Of the various methods available for bronchography in children, the use of the intubation tube is the most practical, especially since it can be carried out by any physician who can perform intubation.

5. Bronchography and fluoroscopy should be carried out at the same time.

6. If positive bronchographic results are obtained, it is usually advisable to examine the bronchi with the bronchoscope before beginning treatment.

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ABSTRACT OF DISCUSSION

DR. LOUIS H. CLERF, Philadelphia: The relatively frequent occurrence of bronchiectasis in children, the difficulties encountered in its diagnosis by physical examination, and the usual roentgen studies, render lung mapping a highly useful diagnostic procedure. The importance of an accurate diagnosis is further emphasized by the fairly satisfactory results that can be secured by bronchoscopic treatment if the bronchiectasis is recognized early. Any method of lung mapping that can be safely employed and that gives uniformly good results in children should be the method of choice. I agree with Dr. Iglauer that the cricothyroid puncture method in children is dangerous and unsatisfactory. Any method that requires general anesthesia is certainly not indicated in the presence of bronchial or pulmonary suppuration. The intubation method, as practiced by Dr. Iglauer, is satisfactory and productive of excellent results. Because of certain technical difficulties encountered in each method, it is obviously impossible for one to become equally proficient in the practice of all four methods. For that reason I have adhered to the use of the bronchoscopic method. Although the technical difficulties are greater than in the other methods, more data are secured. Direct inspection of the larger bronchi, securing an uncontaminated specimen of secretion for bacteriologic study, removal of pus before introduction of the iodized oil, accurate placement of the opaque material by direct vision and fluoroscopic guidance and an opportunity, when desirable, to remove a considerable portion of the oil before withdrawal of the bronchoscope seem to me to be distinct advantages when carrying out complete studies in any case of suspected bronchiectasis.

DR. EUGENE P. PENDERGRASS, Philadelphia: Absolutely normal roentgenograms will be found even when early bronchiectasis is present. Moderate degrees of bronchiectasis give shadows that simulate dark shadows. And finally, by using the method represented by the last slide one finds a large area of increased density in the lower lobe and one is not able to call attention to any especially dense shadow. That is, in ordinary study; and when one uses Bucky diaphragm films one will get differential shadows that will give information. Another fact is that after the use of iodized oil one is not able to get a definite interpretation of the chest in follow-up examinations for from three to six months because of the retention of the oil in the alveolar spaces and the foreign body reaction around the oil. The importance of the use of the fluoroscope has been stressed by Drs. Iglauer and Clerf, and I wish also to stress that point, first, because it locates the position of the lung in which the oil is being introduced; secondly, it prevents any overfilling of the lung; thirdly, it enables one to determine the appearance before the lung is distorted, and, finally, I believe it is possible to do fluoroscopy by the biplane method in many positions, and one can make roentgenograms in the position in which the oil is being instilled.

DR. HOWARD L. STITT, Cincinnati: I have had the good fortune to observe Dr. Iglauer's intubation tube method of bronchial mapping from its incipience. Though I use a curved tip semisoft rubber catheter, I heartily indorse and realize the advantages of the intubation tube method. The intubation tube is easy to introduce, the child is free to walk around after its introduction, and an assistant is not required to hold the tube in place for fluoroscopic examination and stereoroentgenograms while the catheter must be held in place by an assistant, at all times, to prevent the child from coughing or pulling it out. There is better cooperation on the part of the patient because, as Dr. Iglauer says, "He hasn't anything to say about it." The patient cannot cough up the oil because the intubation tube fits snugly in the laryngeal orifice. There is no interference with breathing, whereas with the catheter he has to breathe around it. I feel sure that in every case of chronic bronchitis in children that is not of tuberculous origin the pediatrician or the general practitioner should give an injection of iodized oil by this method. Then if there are any indications for a bronchoscopy it can always be done afterward for visualization of any lesion that might be present.

DR. FLETCHER WOODWARD, University, Va.: It has been difficult for us to get good roentgenograms of the chest with injections of iodized poppy-seed oil. We tried the bronchoscopic

injection method; but as our operating room is quite a distance from the x-ray room it made it difficult to get plates, so we went back to the catheter method, which was fairly satisfactory. Since the introduction of "Avertin" we have attempted to do all of our iodized oil cases under "Avertin" anesthesia. We have done this in perhaps a dozen children and it has worked very well. I realize that the method will probably be criticized, but so far it has been perfectly satisfactory. We always precede the injection by a bronchoscopic examination. We then introduce the catheter, the patient is carried to the x-ray department on a stretcher, and the oil is injected in the x-ray room, and with the patient under "Avertin" anesthesia we have been able to govern the injection by placing him in various positions, and have secured better roentgenograms than before, especially in children.

DR. R. GRAHAM BROWNE, Brisbane, Australia: I am surprised that no mention has been made of the simple method used by Dr. Singer of Barnes Hospital, St. Louis, which I have practiced since I saw him do it many years ago, and that is the simple injection by means of a syringe and cannula into the pharynx, without any anesthetic whatever. Until having seen it done, one does not realize how simple it may be. I have found it useful in children particularly; it takes away the unpleasantness of applying a local anesthetic in the region of the larynx, which is not a pleasant procedure and is apt to frighten children. Anesthesia during the injection of iodized oil is, I think, more or less contraindicated, and I think that if one is successful in administering oil the difficulty in obtaining a good picture with the patient under general anesthesia would be great. The least movement would affect the whole length of the bronchial tree and one would get blurred shadows. Although oil is introduced, it does not necessarily follow that it will show up in the dilatation. The presence of a sticky secretion will of course prevent the oil getting in, and we have found that it requires a certain caliber of an opening to allow the oil to pass through. Attention in the first examination should be paid to the picture obtained with the Bucky diaphragm, a picture of the chest with the peribronchial markings. It is clear that the child will have an increase in inflammation about the bronchi, and this condition we have looked on as a prebronchiectatic state, and I think we shall continue to look on it as such. The rapidity with which these shadows clear up after treatment of the suppurative condition in the upper respiratory tract in some instances is so remarkable that one cannot help but say that bronchiectasis in children is not only associated with sinus suppuration but is actually dependent on the condition.

DR. SAMUEL IGLAUER, Cincinnati: If one wishes to do the bronchoscopy first, that is all right; and if one prefers to do the bronchography first, that is also in order. In regard to the fluoroscopic table, most hospitals are not equipped for that work, and bronchoscopy in itself is rather a complicated procedure, and if one adds to that the use of a fluoroscopic table it requires the presence of a roentgenologist as well as a bronchoscopist. However, there is no doubt that the two procedures should be used in some of these diseases. Dr. Pendergrass said he could see on the table how the oil enters the lungs, and of course one can do the same thing if the patient is standing up. Dr. Stitt is extremely adept in introducing a catheter into the bronchi—it is a sort of sleight of hand performance, and he can do it with children almost as well as with adults. But, as he says, some one has to hold the catheter in place, whereas the intubation tube is self-retaining. As to anesthesia in these cases, perhaps there is no objection to "Avertin" anesthesia, although there may be some objection to inhalation anesthesia. But I believe that the inhalation of ethyl chloride for a few moments would not have any effect on the pulmonary lesions. I am glad Dr. Browne was kind enough to discuss the paper. Dr. Singer informs me that he cannot use his method very well in children since it requires some cooperation on the part of the patient to permit the oil to travel down without any anesthetic. My idea in recommending a simple method is to get the pediatrician to try it himself. Often he treats these children for years without making a diagnosis, whereas with the introduction of an intubation tube he could make an early diagnosis and then send the patient to the bronchoscopist.

PRIMARY ABDOMINAL PREGNANCY

A REVIEW OF THE LITERATURE, WITH REPORT OF A CASE

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The rarity of primary abdominal pregnancy is too well recognized to require any especial emphasis. Although case reports have appeared in the literature sporadically, a critical survey reveals the fact that the majority of the cases are not primary implantation of the ovum on the peritoneum but are secondary to tubal abortion or ruptured tubal pregnancy. Statistics of Hecker [1] recorded the primary twice as frequently as the secondary type, but, according to Williams,[2] careful study of the specimens showed that most of them were secondary to ruptured tubal pregnancy. As a matter of fact, some writers, notably Bland Sutton,[1] have denied the existence of such a condition. Gould and Pyle [3] failed to mention this condition in their "Anomalies and Curiosities of Medicine." In a review of 156,000 cases of pregnancy at the New York Lying-In Hospital, Harrar [4] found 10 cases of apparent primary abdominal pregnancy, but in his opinion all of these were secondary to ruptured tubal pregnancy. Hence it is that rigid criteria have been set up for the acceptance of the authenticity of any reported case. Among these criteria are: (1) a normal appearance of the tubes and ovaries and also of the broad ligaments except at the site of implantation of the ovum; (2) absence of evidence of penetration of the space between the broad ligaments by the fimbriated extremity of the tube; (3) absence of intraligamentary rupture of the tube; (4) lack of evidence of escape of ova from the uterine cavity. There are, undoubtedly, a few authentic cases that conform to these criteria.

The first authentic case was reported by Galabin [5] in 1896. His case was that of a pregnancy situated in the culdesac. A second case was reported by Witthauer [6] in 1903, in which the placental tissue was found in a rolled up piece of omentum attached to the pelvic organs. A third authentic case was reported by Hirst and Knipe [7] in 1908, in which the ovum was implanted on the posterior aspect of the left broad ligament. Since that time there have been occasional reports in the literature, among which are those by Furgason,[8] Scott,[9] LeDoux,[10] Knock,[11] and C. G. Davis.[12]

The case here reported seems worthy of record because it conforms to the requirements established for this rare condition and presents some individual features not hitherto recorded.

REPORT OF CASE

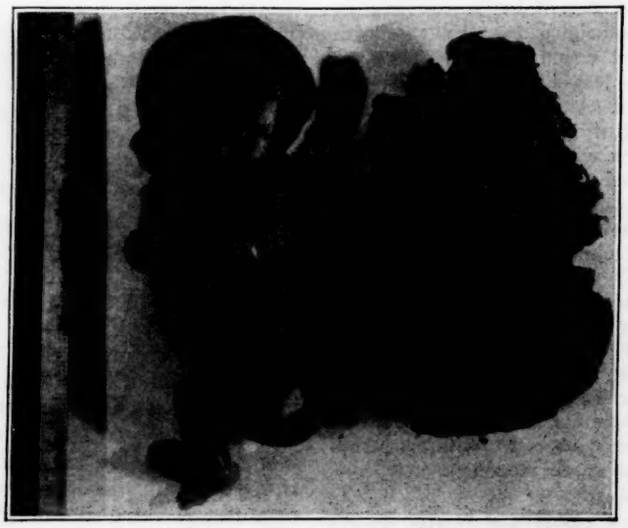
Mrs. M. S., aged 35, a Russian Jewess who had been in this country ten years, first came under our observation, Aug. 4, 1930. She stated that on August 1 she was seized with agonizing pain in the lower portion of the back and abdomen and a

1. Cited by Williams (footnote 2).
2. Williams, J. W.: Obstetrics, ed. 4, New York, D. Appleton & Co., 1917, chapter xxx, p. 696.
3. Gould, G. M., and Pyle, W. L.: Anomalies and Curiosities of Medicine, Philadelphia, W. B. Saunders Company, 1897.
4. Harrar, J. A.: Am. J. Obst. & Gynec. **13**: 752 (June) 1927.
5. Galabin, A. L.: Brit. M. J. **1**: 664; Tr. Obst. Soc. London **38**, 1896.
6. Witthauer, K.: Zentralbl. f. Gynäk. **27**: 136, 1903.
7. Hirst, B. C., and Knipe, N.: Surg., Gynec. & Obst. **7**: 456-459, 1908.
8. Furgason, E. R.: Primary Abdominal Pregnancy, J. A. M. A. **90**: 436-437 (Feb. 11) 1928.
9. Scott, W. A.: Am. J. Obst. & Gynec. **16**: 699-701 (Nov.) 1928.
10. LeDoux, L. A.: Am. J. Obst. & Gynec. **11**: 395 (March) 1926.
11. Knock, J. A.: J. Obst. & Gynec. Brit. Emp. **32**: 546, 1925.
12. Davis, C. G.: Am. Med., October, 1901.

bearing-down sensation in the pelvic region. She felt greatly depressed but did not feel dizzy or faint. She had an urgent desire for evacuation of the bowels on account of a sensation of pressure on the rectum, and thought the evacuation would relieve the pain. However, she was unable to defecate, and repeated enemas only resulted in the return of the solution used. She was alarmed and felt as though she were going to die. A physician was called, who administered a sedative which gave only partial relief. The day following (August 2), the pain became less severe, but she continued very much depressed. August 4 the pain suddenly recurred with increased severity, and she was found by her husband in a semiconscious state. She was taken immediately to my office and after examination was sent to the hospital for immediate operation.

The past history and family history were not significant. Menstruation had been normal since onset at the early age of 12, until the present trouble. The last menstruation was about May 15, and, thinking that she might be pregnant, the patient had consulted a physician but was told that it was too early for a definite diagnosis of pregnancy to be made. She had had only one pregnancy, seventeen years before, which was normal in every respect.

The patient was middle aged, rather poorly nourished, very pallid, and evidently in great pain and shock. The tongue was dry and coated. The skin was very cool and pale. The abdomen was negative to palpation except for tenderness over both lower quadrants. Pelvic examination showed that the perineum was only slightly relaxed; on attempting to make a vaginal examination, I found that the posterior vaginal wall was pushed so far forward toward the symphysis by a mass behind it that it was difficult to introduce the examining finger past it. The anterior lip of the cervix could barely be palpated, as the cervix and uterus were displaced so far upward as to be almost beyond the reach of the finger. On insertion of the finger into the rectum, a mass the size of a small grapefruit was encountered bulging into the rectum from the anterior aspect just about 2 inches (5 cm.) above the anus. The sphincter was markedly relaxed, and by slightly retracting it with the fingers a globular dark bluish mass was brought into view. Examination of the blood showed a hemoglobin of 75 per cent and leukocytosis of 13,200, with 78 per cent polymorphonuclears. The urine showed a trace of albumin and three plus pus.



Fetus and placenta in case of primary abdominal pregnancy.

A tentative diagnosis of an unusual type of extra-uterine pregnancy complicated by hemorrhage was made and immediate surgical treatment arranged for.

When the patient was taken to the hospital, the first plan was to proceed with immediate laparotomy without any interference through the rectum or vagina. However, on repeating the rectal and vaginal examination after spinal anesthesia had been administered, I changed my opinion because of the desperate condition of the patient and because it seemed that the mass bulging into the rectum was already on the point of rupture. It was thought that a simple puncture and evacuation of the contents of the mass, evidently a blood clot, might be sufficient for the present. On puncture of the mass through the rectum, a large quantity of blood clot was evacuated and then a quantity of fluid blood appeared and continued to flow, and this seemed to render laparotomy imperative, despite the danger of peritonitis and the certainty of a subsequent fecal fistula. A bimanual examination by rectum was repeated after evacuation of the blood clot and revealed the uterus slightly enlarged, freely movable and in a very high position, with the cervix located high up toward the promontory of the sacrum. A mass the size of an orange, firmly fixed in the culdesac, could still be felt below and behind the uterus.

When the abdomen was opened, a large quantity of fluid and clotted blood was evacuated, after which a placenta and fetus were uncovered, situated in the culdesac. The placenta was attached to the peritoneum of the floor of the culdesac, the anterior wall of the rectum, and the lower portion of the posterior aspect of the cervix. The tubes were identical and normal, showed no evidence of previous rupture and were not in any way attached to the mass, being some 2 or 3 inches away from the point of attachment of the placenta to the peritoneum. The fetus and placenta were shelled out, and the pelvic peritoneum around the cavity was brought up to the parietal peritoneum at the line of incision and sutured completely around; by this means the general peritoneal cavity was sealed off and the space between the uterus and the rectum was marsupialized. This space was packed with gauze.

As was expected, a stormy convalescence ensued. The patient rallied somewhat from the preoperative shock under administration of a large quantity of saline solution by hypodermoclysis, but the condition was still so desperate that a transfusion seemed urgent. After transfusion of 500 cc. of citrated blood, the patient showed marked immediate improvement, which was sustained. The fecal fistula that became apparent after the packing was removed proved obstinate and did not finally heal until September 20, forty-seven days after the patient was admitted. The patient was discharged from the hospital, September 22.

The laboratory examination of the specimen was made by Dr. A. H. Braden, who reported as follows: The fetus weighed 64 Gm. The total length from the vertex to the heels was 14 cm. The length from the vertex to the coccyx was 10 cm. The external ear measured 7 mm. The weight of the placenta was 65 Gm. From the foregoing data one would judge the pregnancy to have been of about four months' duration.

COMMENT

This case presents interesting features and much basis for discussion as to the proper management. It is surprising that, from the cessation of menses in May until the crisis in the condition developed in August, the condition had not given symptoms. It is undoubtedly true that a great increase in the size of the mass occurred shortly before the patient came under my care, following a hemorrhage. This sudden increase in the size of the mass, with the bulging into the anterior rectal wall, explained her most prominent symptoms of pain and desire for defecation, and the recent hemorrhage explained the condition of shock in which she was when I first saw her.

There is also ample cause for difference of opinion as to the best method of procedure in this case. Although Nather and Ochsner[13] have furnished a precedent for evacuation of abscesses in the culdesac by the rectal route, there is grave question of the wisdom of this approach in a case such as this. I can justify the procedure only by the hope that I entertained of relieving the condition without recourse to laparotomy in a desperately shocked patient, who presented a mass already on the point of rupture into the rectum.

13. Nather, K., and Ochsner, E. W. A.: Surg., Gynec. & Obst. 37: 665-673 (Nov.) 1923.

Naturally, the vaginal route would have been preferable, but it was not feasible except through the posterior vaginal wall, low down, which would almost certainly have resulted in a rectovaginal fistula. Because of upward and backward displacement of the cervix, it was not possible to perform a posterior colpotomy, which would have been the ideal procedure.

There is also some difference of opinion as to the management of the placenta when the condition is approached by the abdominal route. There are three methods recommended: (1) separation and removal; (2) marsupialization; (3) leaving the placenta in situ with or without drainage. When the last mentioned method is used, Beck [14] has shown rather conclusively that the mortality is lower without drainage than with it. In my case, in which peritoneal infection was to be expected, marsupialization appeared to be the safest and most logical procedure.

SUMMARY

1. The literature relative to primary abdominal pregnancy is briefly reviewed to show the rarity of this condition, and the difference in opinion as to the existence of this condition is indicated.

2. A case of primary abdominal pregnancy with unusual features is reported.

3. A discussion of the treatment is outlined.

4. Accepted methods of dealing with similar cases are briefly noted.

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THE COMPARATIVE VALUE OF THE ARSPHENAMINES IN THE TREATMENT OF EARLY SYPHILIS *

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Several years ago we were prompted to begin a study of the comparative value of arsphenamine, neoarsphenamine and silver arsphenamine in the treatment of early syphilis, because of the increasing variety of preparations of arsphenamines on the market and the perplexity which we, with most physicians, felt in regard to their relative merits. Adding to this uncertainty were the varying preferences expressed by many of our best syphilologists either as to the drug or as to the plan of treatment.

Irvine,[1] in his work at the clinic of the University of Minnesota Medical School, used neoarsphenamine with mercury almost exclusively, and his reports show that the majority of his cases beginning treatment in the early stages and adhering to the prescribed course with this drug became negative and remained so.

In his study of the outpatient clinic and private practice of Dr. Scholtz of Königsberg, Silberstein [2] found that arsphenamine had a higher therapeutic index than neoarsphenamine.

One of the most comprehensive surveys of the treatment of early syphilis has been made by Moore and Keidel.[3] They conclude that the lower toxicity and the greater ease of administration of neoarsphenamine are not sufficient to offset the loss in therapeutic efficacy, and therefore they favor the use of arsphenamine in moderate doses.

Because of the lower toxicity of neoarsphenamine and because of the fact that no neutralization is required before administration, Hazen [4] estimates that 90 per cent of the arsphenamine used in the treatment of syphilis is of that variety. Regarding the toxicity, he reminds us that results obtained in animal experimentation do not apply to man and that many of the syphilologists believe that the reactions following the use of the neutral drug are greater than those resulting from the administration of the older drug. In his own practice and in the Georgetown clinic he found arsphenamine more effective.

Schamberg [5] gives his choice as neoarsphenamine in conjunction with bismuth. He states that in a high percentage of cases observed, the Wassermann reaction of the blood was negative after the first course of treatment.

In reviewing the literature on the effectiveness of the various arsphenamines in antisyphilitic treatment, we have been able to find but little on the comparison of silver arsphenamine with neoarsphenamine or with arsphenamine. Stokes [6] states that silver arsphenamine is now receiving more attention and that the results so far obtained warrant this further investigation.

The present paper presents the results of an inquiry into the relative merits of arsphenamine, neoarsphenamine and silver arsphenamine in the treatment of early syphilis. For this purpose, the records of over 5,000 patients were examined, and only those were selected whose histories showed an infection of not more than six months' duration when treatment was begun and who remained under treatment and observation for not less than six months thereafter.

Four hundred and thirty-six patients were found to have fulfilled these requirements. For reasons of convenience, they were studied in two separate groups. The first group (about 240 in all) was composed of patients from the Vanderbilt Clinic and the second of 196 cases from the City Hospital and our private practice.

Investigations were made into (1) the disappearance of visible lesions; (2) the reversal of the Wassermann reaction; (3) complications arising from administration of the different drugs, and (4) the number and nature of relapses.

For reasons connected with the compiling of the original data, it was not always possible to study each phase of the subject from the entire 436 cases; but wherever parallel information was available on the two groups of patients aforementioned, joint results are presented in our composite tables.

It was not considered feasible, within the limits of the present study, to attempt an appraisal of supplementary mercury, or bismuth treatment, but it might be well to note here that practically all the patients included in our statistics received either one or the other in addition to the arsphenamine. In a certain proportion of

14. Beck, A. C.: Treatment of Extra-Uterine Pregnancy After the Fifth Month, J. A. M. A. **73**: 962-965 (Sept. 27) 1919.

* From the Vanderbilt Clinic, Columbia University College of Physicians and Surgeons.

* Read before the Section on Dermatology and Syphilology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

1. Irvine, H. G.: Two Hundred and Fifteen Cases of Syphilis After Five Years, J. A. M. A. **77**: 1620 (Nov. 19) 1921.

2. Silberstein: Arch. f. Dermat. u. Syph. **143**: 334, 1922.

3. Moore, J. E., and Keidel, A.: Bull. Johns Hopkins Hosp. **39**: 1 (July) 1926.

4. Hazen, H. H.: Low Therapeutic Index of Neoarsphenamine, J. A. M. A. **93**: 696 (March 2) 1929.

5. Schamberg, J. F.: Bismuth and Neoarsphenamine in Syphilis, and Plea for More Conservative Dosage of Arsenobenzenes, Arch. Dermat. & Syph. **20**: 431 (Oct.) 1929.

6. Stokes, J. H.: Critical Treatment Problems in Today's Syphilology, J. A. M. A. **94**: 1029 (April 5) 1930.

the cases, the mercury or bismuth was administered concurrently with the arsphenamine; in others it was administered alternately, while in a third group the supplementary treatment overlapped the arsphenamine course.

In table 1 we estimated the average time for the disappearance of visible lesions and the amount of treatment received up to that time.

In thirteen cases of primary syphilis (table 1A) treated with arsphenamine, we found that the time which elapsed before the chancre was entirely healed averaged 9.8 days; for the same number of cases treated with neoarsphenamine, the average was 21.3 days; for five cases treated with silver arsphenamine, 13.4 days. The average amount of arsphenamine was 1.05 Gm.; of neoarsphenamine, 2.96 Gm. and of silver arsphenamine, 0.97 Gm. The average number of injections was 2.6 for those with arsphenamine, 4.8 for neoarsphenamine, and 4.4 for silver arsphenamine.

In our group of secondary cases, the time counted is that required for the disappearance of both primary and secondary lesions, if one persisted after the other had cleared up. Thus, in several instances in which the chancre failed to heal until after the rash had faded out, the later date was the one counted.

In the twenty-nine secondary cases (table 1B) treated with arsphenamine, the visible lesions disappeared in an average of 17.5 days; in the forty-five cases treated with neoarsphenamine, the average time was 23.7 days, and for the ten treated with silver, 25.3 days. The average amount of the drug given was 1.43 Gm. of arsphenamine in 3.98 average injections, 3.3 Gm. of neoarsphenamine in 6.18 injections and 0.899 Gm. of silver arsphenamine in 4 average injections.

Thus, results indicate a fewer number of injections, a smaller quantity of the drug and a shorter time for the disappearance of lesions in both the primary and the secondary cases treated with arsphenamine than with either of the other products.

TABLE 1.—*Average Time and Treatment Required for Disappearance of Visible Lesions*

Drug	Number of Cases	Average Amount Received, Gm.	Average Number of Injections	Average Time in Days	Clinical Relapses: Number	Clinical Relapses: Per Cent
A. Primaries (Seropositive, Seronegative)						
Arsphenamine	13	1.05	2.6	9.8	1	7.7
Neoarsphenamine	13	2.96	4.8	21.3	1	7.7
Silver arsphenamine	5	0.97	4.4	13.4	0	0
B. Secondaries						
Arsphenamine	19	1.43	3.98	17.5	0	0
Neoarsphenamine	48	3.30	6.18	23.7	8	16.7
Silver arsphenamine	10	0.899	4.0	25.3	0	0

It should be understood that in the case of clinic patients, who attend as a rule at longer intervals than private patients, the time recorded usually represents the date on which the physician first noted, for example, that the rash was entirely faded out. In many instances the actual date would be several days earlier, but there seemed to be no way of fixing a more accurate norm when dealing with large numbers of case reports. The final figures are correspondingly conservative.

In table 2 A we show the figures from our inquiry into the time required for the Wassermann reactions to become negative; also the average treatment in grams, together with the number of injections. Patients treated with more than one arsphenamine were included in the count only when the reversal of the Wassermann reaction occurred under the first arsphenamine. Only Wassermann reactions reported negative with both antigens were counted.

Here, also, allowance should be made for the fact that some clinic patients who were Wassermann-positive at the beginning of a course of treatment might have shown a negative Wassermann reaction at the end if they had returned for their blood test as scheduled. In such cases, the date counted was that of the first negative Wassermann reaction recorded after the patient returned to continue his treatment, a factor

TABLE 2.—*Average Time and Treatment Required for Wassermann Reaction to Become Negative*

Drug	Number of Cases	Average Amount Received, Gm.	Average Number of Injections	Average Time in Days	Serologic Relapses: Number	Serologic Relapses: Per Cent
A. Seropositive Primaries						
Arsphenamine	18	3.13	7.26	38.2	1	5.5
Neoarsphenamine	12	5.54	10.41	81.6	0	0
Silver arsphenamine	2	3.73	17.0	85.0	1	50
B. Secondaries						
Arsphenamine	85	4.15	10.07	83.4	4	4.7
Neoarsphenamine	98	7.3	13.8	105.1	30	30.6
Silver arsphenamine	6	2.8	12.5	101.6	3	50.0

which undoubtedly makes the computed averages considerably higher than the actual ones.

For the eighteen seropositive primary cases treated with arsphenamine, the time averaged 38.2 days; for the twelve cases treated with neoarsphenamine, the time was 81.6 days, and for the two cases in which silver arsphenamine was used, 85 days. The average amount of arsphenamine necessary to produce the negative Wassermann reaction was 3.13 Gm. in 7.26 injections; the average amount of neoarsphenamine was 5.54 Gm. in 10.41 injections, and of silver arsphenamine 3.73 Gm. in 17 injections.

The eighty-five patients with secondary syphilis (table 2 B) treated with arsphenamine received an average of 4.15 Gm. in 10.07 injections, requiring 83.4 days before the Wassermann reaction became negative. The ninety-eight treated with neoarsphenamine received an average of 7.3 Gm. in 13.8 injections, requiring 105.1 days up to the first negative Wassermann reaction.

Here, again arsphenamine presents the most favorable estimate, especially when we compare the following primary group averages:

The 3.13 Gm. of arsphenamine contain 97.03 mg. of metallic arsenic.

The 5.54 Gm. of neoarsphenamine contain 110.08 mg. of metallic arsenic.

The 3.73 Gm. of silver arsphenamine contain 70.87 mg. of metallic arsenic and 52.22 mg. of metallic silver.

The averages for the secondary cases compare thus:

The 4.15 Gm. of arsphenamine contain 128.65 mg. of metallic arsenic.

The 7.3 Gm. of neoarsphenamine contain 146.00 mg. of metallic arsenic.

The 2.80 Gm. of silver arsphenamine contain 53.20 mg. of metallic arsenic and 39.20 mg. of metallic silver.

In short, with arsphenamine the Wassermann reaction becomes negative in a shorter period, under a smaller amount of the drug and with fewer injections.

Furthermore, the proportion of relapses of the Wassermann reaction in table 2 is smaller under treatment with arsphenamine than with either of the other drugs,

being 4.7 against 30.6 per cent for neoarsphenamine, and 50 per cent for silver; the 50 per cent, however, is based on only six patients.

It has been observed [7] that a Wassermann reaction which becomes negative early, especially after the first course of treatment, often becomes positive again, whereas one which is slower in becoming negative is more likely to remain so for a considerable period. This would tend to minimize the value of an early reversal of the Wassermann reaction as a criterion for judging the efficacy of a drug. However, in our present study, the results show that patients whose group Wassermann reaction became negative earliest, namely, those treated with arsphenamine, showed also the smallest percentage of relapses, figured over the entire period of treatment and observation. Whether this is essentially at variance with the findings of previous investigators or is explicable on other grounds, we are not prepared to say without further study.

We designed table 3 to show the results for each arsphenamine in relation to (1) the total treatment received by the patient, (2) the first negative Wassermann reaction (time in days from patient's admission to the clinic) and (3) serologic relapses.

Comparing seropositive primary cases only (table 3 A), the average time required for reducing the Wassermann reaction was: for arsphenamine, 63.76 days (30 cases); for neoarsphenamine, 117.2 days (21 cases); for silver arsphenamine, 41 days (1 case). In this seropositive primary group, one of our original thirty-one cases treated with arsphenamine and five from the twenty-six treated with neoarsphenamine failed to become negative. The total treatment and the percentage of serologic relapses were: for arsphenamine (30 cases), average grams 9.1 in 20.6 injections, 3.3 relapses; for neoarsphenamine (21 cases), average grams 12.05 in 20.1 injections, 4.7 relapses; for silver arsphenamine (1 case), average grams 3.9 in 27 injections, 0 relapses.

Comparing secondary cases only (table 3 B), the average time for reducing the Wassermann reaction was: for arsphenamine, 87.5 days (91 cases); for neoarsphenamine, 111.7 days (103 cases); for silver arsphenamine, 90 days (1 case). The total treatment and the percentage of serologic relapses were: for old arsphenamine (91 cases), average grams 8.68 in 19.7 injections, 4.4 per cent relapses; for neoarsphenamine (103 cases), average grams 13.8 in 24.3 injections, 24.2 per cent relapses; for silver arsphenamine (1 case), average grams 6.0 in 30.0 injections, 0 relapses.

We had twenty-three seronegative primary cases (table 3 C): Ten were treated with arsphenamine for a total average of 27.6 weeks, receiving an average of 7.94 Gm. in 18.7 injections. Ten, treated with neoarsphenamine for an average of 47.2 weeks, received an average of 14.6 Gm. in 24.2 injections, and three who had silver arsphenamine for 32.6 weeks received 2.03 Gm. in 10.3 injections.

One of the ten patients treated with arsphenamine had a serologic relapse. Three of the ten treated with neoarsphenamine had serologic relapses, and one of the three had a clinical relapse also. Two of the three patients treated with silver arsphenamine had serologic relapses.

Spinal fluid tests were made in eight of the ten cases treated with arsphenamine. Five spinal fluid tests were made in the cases in which silver arsphenamine was used; all these tests gave negative results. In our group of twenty-three latent cases (table 3 D), of eight cases treated for an average of 55 weeks with arsphenamine (6.53 Gm. in 17 injections), three became negative in 55 days. They did not show any relapses and all spinal tests were reported negative. Of fifteen cases treated for an average of 70.1 weeks with neoarsphenamine (10.94 Gm. in 27.3 injections), ten cases became negative in an average of 172.9 days. Five of

TABLE 3.—*Results Judged by Total Treatment, First Negative Wassermann Reaction, and Relapses*

Drug	Total Number of Patients Treated	Average Length of Treatment in Weeks	Total Average Amount Received	Total Average Number of Injections	First Negative Wassermann Reaction Days After Admission: Number of Cases	First Negative Wassermann Reaction Days After Admission: Average Number of Days	1 Serologic Relapses: Number	1 Serologic Relapses: Per Cent	2 Number of Wassermann-Fast Cases	3 Number of Clinical Relapses	Total Unsatisfactory Results (Inc. 1, 2, 3): Number	Total Unsatisfactory Results (Inc. 1, 2, 3): Per Cent
A. Seropositive Primaries												
Arsphenamine	31	37.1	9.1	20.6	30	63.76	1	3.3	1	1	3	9.6
Neoarsphenamine	26	50.3	12.05	20.1	21.0	117.2	1	4.7	5	1	7	26.9
Silver arsphenamine	1	48.0	3.9	27	1	41	0	0	0	0	0	0
B. Secondaries												
Arsphenamine	98	38.3	8.68	19.7	91.0	87.5	4	4.4	7	2	12	12.2
Neoarsphenamine	120	50.5	13.8	24.3	103	111.7	25	24.2	17	9	51	42.5
Silver arsphenamine	1	104	6.0	30	1	90	0	0	0	0	0	0

C. Seronegative Primaries; Results Judged by Total Treatment and Relapses

Drug	Total Number of Cases Treated	Average Length of Treatment in Weeks	Total Average Amount Received, Gm.	Total Average Number of Injections	Spinal Fluid	Number of Relapses: Serologic	Number of Relapses: Clinical	Percentage of Relapses; Serologic and Clinical
Arsphenamine	10	27.6	7.94	18.7	8 Neg.	1	0	10
Neoarsphenamine	10	47.2	14.6	24.2	5 Neg.	3	1	40
Silver arsphenamine	3	32.6	2.03	10.3	2 Neg.	2	0	66⅔

D. Latent; Results Judged by First Negative Wassermann Reaction, Total Treatment and Relapses

Drug	Total Number of Cases Treated	Average Length of Treatment in Weeks	Total Average Amount Received, Gm.	Total Average Number of Injections	First Negative Wassermann Reaction; Days After Admission: Number of Cases	First Negative Wassermann Reaction; Days After Admission: Average Number of Days	Spinal Fluid	Number of Relapses: Serologic	Number of Relapses: Clinical	Percentage of Relapses Serologic and Clinical
Arsphenamine	8	55	6.53	17	3	55	3 Neg.	0	0	0
Neoarsphenamine	15	70.1	10.94	27.3	10	172.9	5 Neg., 2 Pos.	5	2	46.6
Silver arsphenamine	0	—	—	—	—	—	—	—	—	—

7. Blumenthal and Mallinckbrodt: Handb. d. Haut- u. Geschlechtskr., Berlin, Julius Springer **15**: 459.

these showed serologic relapses and two, clinical relapses; seven patients had spinal fluid tests; in five the results were negative and in two, positive. There were no cases in the latent group that were treated with silver arsphenamine.

In the seronegative group and the latent cases, we had fewer relapses with arsphenamine than with either of the other drugs. The Wassermann reactions in the latent cases that became negative did so in a shorter period of time.

In order to compare our seropositive primary, secondary and latent groups more readily, we made table 4, tabulating the results based on the first negative Wassermann reaction and the serologic relapses. Omitting the latent cases of syphilis and combining the total averages of the primary and secondary groups, we had figures contrasting thus: In 132 cases treated with arsphenamine there was an average of 84.7 days up to their first negative Wassermann reaction. Nine of these patients, or 6.8 per cent, had a serologic relapse.

The group of 153 treated with neoarsphenamine required 113.9 days as an average to reduce their Wassermann reaction. Forty, or 26.2 per cent, had a relapse.

Eight cases treated with silver arsphenamine averaged 96.6 days before the negative Wassermann reaction and four, or 50 per cent, relapsed serologically.

fact, as well as to the early stage of the disease in which most of the patients began treatment. It is interesting to note that those patients treated with more than one arsphenamine had the highest percentage of positive Wassermann reactions of the spinal fluids, three out of twenty-seven. The patients receiving arsphenamine showed the lowest percentage, 0.91 per cent compared with 4.7 per cent in those receiving neoarsphenamine.

Complications following the administration of arsphenamine were divided for convenience into two groups: immediate reactions and delayed reactions. The only severe immediate reactions reported were the so-called nitritoid crises. Under mild immediate reactions were included:

(*a*) Gastro-intestinal disturbances: nausea, vomiting, diarrhea.

(*b*) Chills and fever (in one case accompanying edema of the face).

(*c*) Mild anaphylactoid reactions.

(*d*) Urticaria and transitory skin eruptions, including three probable Herxheimer reactions.

(*e*) Headaches and general malaise. (Headaches and general malaise reported as occurring repeatedly in the same patient were counted only once.)

Owing to the method of compiling the original data, figures for immediate reactions were available on a limited number of cases only. The majority of these

TABLE 4.—*A Comparison by Drug of Results Based on First Negative Wassermann Reaction and on Serologic Relapses*

	Seropositive Primaries				Secondaries				Latent*				Totals			
		First Negative Wassermann Reaction,	Serologic Relapses			First Negative Wassermann Reaction,	Serologic Relapses			First Negative Wassermann Reaction,	Serologic Relapses			First Negative Wassermann Reaction	Serologic Relapses	
Drug	Number of Cases	Average in Days	Number	Per Cent	Number of Cases	Average in Days	Number	Per Cent	Number of Cases	Average in Days	Number	Per Cent	Number of Cases	Average in Days	Number	Per Cent
Arsphenamine.....	31	63.1	2	6.5	101	85.7	7	6.93	3	55	0	0	132	84.7	9	6.8
Neoarsphenamine....	24	119.8	1	4.1	129	113.0	43	33.3	10	172.9	5	50	153	113.9	40	26.2
Silver arsphenamine..	2	85	1	50	6	101.6	3	50.0	—	—	—	—	8	97.8	4	50.0

* Latent cases not included in totals.

In counting relapses we recorded all ± Wassermann reactions as serologic relapses; probably had we been less strict, the number would have been reduced considerably.

Whenever it was possible we made spinal fluid tests and in a group of 149 cases treated with arsphenamine we were able to examine the fluids of 11 patients; 110 showed negative Wassermann reactions and 1 had a positive Wassermann reaction of the spinal fluid, thus making the proportion of positive reactions in spinal fluids in patients treated with arsphenamine 0.91 per cent.

Out of 197 patients treated with neoarsphenamine, a spinal puncture was done on 106. A positive Wassermann reaction of the spinal fluid was obtained in but five patients, or 4.7 per cent.

Only six of sixteen patients treated with silver arsphenamine had spinal fluid tests; all had negative Wassermann reactions.

In the group of sixty-six patients treated with more than one arsphenamine, twenty-six had spinal fluid tests, and three (11.5 per cent) of these gave positive results. (They were the three positive Wassermann reactions in secondary syphilis.)

All the spinal fluid tests were made after the first eight weeks of treatment, many of them after the second or third course; we think that the low percentage of positive Wassermann reactions may be due to this

cases, when classified under a particular arsphenamine, were treated exclusively with that one preparation; but a certain number of additional cases, while treated, for example, with arsphenamine, also received, either before or after their arsphenamine courses, neoarsphenamine or silver arsphenamine, the change usually being made on account of individual intolerance or refractory Wassermann reactions. These additional cases are included in the total counts for purposes of this table; consequently the same case may be listed under two or, in an occasional instance, three drugs.

In this entire group only four severe immediate reactions were reported, three of these occurring in patients treated with neoarsphenamine and one in a patient treated with silver arsphenamine. This is equivalent to one reaction for every 53 patients treated with neoarsphenamine, or one reaction to every 1,181 injections of the drug. The ratio for silver arsphenamine would then be one reaction to every 35 patients treated, or one to every 565 injections given. As already implied, no severe immediate reaction was reported in the group of 108 patients who received arsphenamine.

In considering the mild immediate reactions (table 5 A), arsphenamine shows a total of 15 "reacting" patients out of the 108 treated, or an approximate ratio of 1 to 7. Among these 15 patients there were altogether 28 separate reactions, or 1 reaction to every 75

injections given. Of the 158 neoarsphenamine patients, 22 were reported as having mild immediate reactions, the proportion being 1 to every 7 patients treated. Thirty-five separate reactions were reported for the 22 patients in this group, making the ratio 1 to every 101 neoarsphenamine injections given. Three of the patients treated with silver arsphenamine had mild reactions and one of the three had two separate reactions. While the silver arsphenamine group is too small to make the figures of much value, the ratio of reacting patients to the number of cases treated would be 1 to 12, or 1 reaction to every 141 injections given.

In regard to the relatively large proportion of reactions to the total number of injections given, it should be borne in mind that all reported reactions were included, even those of the very mild type usually excluded in similar statistics.

From the foregoing it will be seen that, judged on the basis of the relative number of reacting cases, arsphenamine and neoarsphenamine show about the same result for the mild reaction group, but the three severe reactions recorded in patients treated with neoarsphenamine make the total results appear less untoward effects was classified in the neoarsphenamine group for purposes of this table; but a patient in whom jaundice or dermatitis developed after he had received one or more courses of a second or third arsphenamine was excluded from consideration, since it was obviously impossible to determine the share of either drug in the toxic manifestation.

The delayed reactions observed were dermatitis, jaundice, neuritis and nephritis. They were distributed among the various arsphenamine cases as follows: In 198 patients treated with arsphenamine, dermatitis developed in 6 and jaundice in 13. There was no record of any case of neuritis or nephritis among patients treated with arsphenamine. Among the 218 patients who received neoarsphenamine, dermatitis developed in 16 and jaundice in 17; in 3 others of this group neuritis developed and in 2, nephritis. In the small group of 18 patients treated with silver arsphenamine there were two cases of dermatitis and one of jaundice. No cases of neuritis or of nephritis were reported in patients treated with silver arsphenamine.

If we now consider totals for the delayed reactions group, the expectancy of reaction cases would be

TABLE 5.—*Complications Following Administration of Arsphenamine*

			Mild Immediate Reactions				Severe Immediate Reactions				Totals	
	Total Number of Cases Treated	Total Number of Injections Given	Number of Cases Showing Reactions	Ratio of "Reaction Cases" to Total Number of Cases Treated	Number of Separate Reactions	Ratio of Reactions to Total Number of Injections Given	Number of Cases Showing Reactions	Ratio of "Reaction Cases" to Total Number of Cases Treated	Number of Separate Reactions	Ratio of Reactions to Total Number of Injections Given	Ratio of "Reaction Cases" to Total Number of Cases Treated	Ratio of Reactions to Total Number of Injections Given
A. Immediate Reactions												
Arsphenamine	198	2,092	15	1:7	28	1:75	0	0	0	0	1:7	1:75
Neoarsphenamine	158	3,544	22	1:7	35	1:101	3	1:53	3	1:1181	1:6	1:93
Silver arsphenamine	35	565	3	1:12	4	1:141	1	1:35	1	1:565	1:9	1:113

B. Delayed Reactions: Totals, Including (1) Dermatitis, (2) Jaundice, (3) Nephritis and (4) Neuritis

	Total Number of Cases Treated	Number of Dermatitis Cases	Number of Jaundice Cases	Number of Neuritis Cases	Number of Nephritis Cases	Total Number of Delayed Reactions	Ratio of Reactions to Total Number of Cases Treated	Ratio of Dermatitis and Jaundice Cases to Total Number of Cases Treated	
								Dermatitis	Jaundice
Arsphenamine	198	6	13	0	0	19	1:10	1:33	1:15
Neoarsphenamine	218	16	17	3	2	38	1:6	1:14	1:13
Silver arsphenamine	18	2	1	0	0	3	1:6	1:9	1:18

favorable for neoarsphenamine. Again, considering mild reactions only, silver arsphenamine makes a better showing than either arsphenamine or neoarsphenamine, but the one severe reaction in the group of thirty-five patients raises the final ratio considerably.

If we leave silver arsphenamine out of consideration on account of the small number of cases treated, the total columns balance in favor of arsphenamine, in regard to the number of reacting cases; but if the number of separate reactions is considered, neoarsphenamine has a considerable advantage (one reaction to every seventy-five injections for arsphenamine and one to every ninety-three injections of neoarsphenamine). From this, it is apparent that a larger proportion of the patients treated with arsphenamine had multiple reactions.

Turning now to delayed reactions (table 5 B), the cases in this group were limited to (1) those treated throughout with a single arsphenamine and (2) any additional ones whose complication could reasonably be attributed to a single arsphenamine; thus, assuming the delayed reactions to be associated with the cumulative action of the drug, the patient in whom a dermatitis developed when neoarsphenamine was used but who later tolerated silver arsphenamine without (approximately): for old arsphenamine, 1 to every 10 cases treated; for neoarsphenamine and silver arsphenamine each 1 to 6. Figures were not available for the ratio of delayed reactions to the total number of injections of the various drugs.

The probability of jaundice developing seems to be slightly greater under neoarsphenamine treatment than with arsphenamine (1 to 13 and 1 to 15, respectively). As for dermatitis, the difference is much more striking, the ratio being approximately 1 to 14 for neoarsphenamine and 1 to 33 for arsphenamine. As previously observed, the silver arsphenamine group (eighteen patients in all) is too small for comparisons to be of much value.

There seems to be little uniformity in the number of injections preceding the onset of either dermatitis or jaundice. In the former, the number of injections ranged from two to thirty-six, with the largest number of cases around seven and eight. In the latter, the number of injections ranged from four to twenty-three, with the largest number of cases around ten and eleven.

Three patients (two treated with neoarsphenamine and one with silver arsphenamine) had a recurrence of dermatitis. In each instance, with the first appearance

of the rash, antisyphilitic treatment was discontinued and sodium thiosulphate given over periods of three weeks, twenty-one weeks and eighteen days, respectively. The recurrent rash in every case followed the first injection of the new course of arsphenamine. Treatment was again temporarily discontinued in two cases and the drug changed in the third.

It was thought that it might be of some interest to see whether a dermatitis might have any effect on the further course of the syphilis. Investigation of the serologic reactions showed that in the sixteen cases of dermatitis studied in detail, eight which were Wassermann-positive before the dermatitis became negative during the dermatitis and remained negative for varying periods after the dermatitis had cleared up. Since it was the policy to stop arsphenamine treatment and to give sodium thiosulphate on the first appearance of the rash, it is apparent that the reversal of the Wassermann reaction occurred when no antisyphilitic treatment was being received. Obviously, however, any conclusions as to the possible rôle of nonspecific fever therapy would be premature without a larger number of cases and more careful investigation of other factors.

No cases of hemorrhagic encephalitis were reported in any of the patients studied, and none of the cases of dermatitis were of the severe exfoliating type. Several patients reported numbness and tingling sensations, sometimes coupled with pains in the joints. These patients were watched for further symptoms of neuritis, but as the preliminary symptoms subsided in each instance their cases were not classified as neuritis. There was no death attributable to arsphenamine therapy in any of the 436 cases studied.

Among our private cases we found thirty-four which had been observed from four to fifteen years *after* the termination of their treatment, all of which had remained negative both clinically and serologically, with the exception of two.

Twenty-five of the thirty-four patients had been treated with arsphenamine and nine with neoarsphenamine.

In the arsphenamine group we had nine seropositive cases of primary syphilis observed for from five to thirteen years which had been treated intensively and continuously with a total average of 20.5 intravenous injections and 32 mercury injections for a total average of forty-four weeks. These cases became negative at or before termination of the first course of treatment. In one patient, who after his sixth dose missed his injections for three weeks, there developed evidence of an acute cerebrospinal meningitis, and tests of the spinal fluid were strongly positive. He was given intraspinal injections in conjunction with his intravenous and intramuscular treatment. This case required about 150 days to become negative and it remained negative from 1917 to 1927, when the patient died at the age of 56, from cardiac disease. An autopsy done on another of these patients after death from acute alcoholism, five years after his last treatment, revealed no signs of syphilis.

Sixteen secondary cases, treated with arsphenamine and observed from five to fourteen years, had even a smaller total average number of injections of arsphenamine in a period of about fifty weeks. Much of this treatment had been given in Dr. Fordyce's office at a time when there were fewer injections in a course and comparatively larger doses than we give now, and when arsphenamine was the drug most commonly used.

These secondary cases were all negative after their first course of arsphenamine and mercury, and all had negative spinal fluids except one, in which treatment had been interrupted by an attack of pneumonia after the twelfth injection of arsphenamine and the sixteenth injection of mercury. The patient took potassium iodide and mercury by mouth for three months but had no additional treatment. Five years later, he returned with gastric symptoms and, on examination, showed a large liver and spleen and a 3 plus Wassermann reaction with the cholesterol antigen, the alcoholic antigen being negative. His symptoms disappeared under treatment and his Wassermann reaction has now been negative for four years.

In the group of nine cases treated with neoarsphenamine there were three seronegative primary cases which had been under observation about five years since suspension of treatment. One patient who was given eight injections of neoarsphenamine and fifteen injections of mercury had had a negative Wassermann reaction for four years, when he returned with a gumma of the pharynx and a still negative Wassermann reaction, which became positive under a provocative dose of neoarsphenamine. The other two seronegative cases have remained negative.

One patient presenting seropositive primary syphilis had had five intravenous injections of neoarsphenamine and three of bismuth, when a dermatitis, jaundice and nephritis developed. The Wassermann reaction was 3 plus after this treatment but became negative when the complications subsided and both the blood and spinal fluid have remained negative with no further treatment than fifty-four additional injections of a proprietary bismuth preparation at infrequent intervals.

Of five patients with secondary syphilis treated with neoarsphenamine and observed for from four to eight years after treatment, three had a serologic relapse, one of these having also a positive spinal fluid. All these cases became negative again and have remained so.

Summing up our observations from the figures in the tables previously discussed, we can only conclude that, of the three drugs used in our antisyphilitic treatment, arsphenamine has proved in all respects the most satisfactory.

It requires (1) fewer injections; (2) a smaller amount of the drug, and (3) a shorter period of time to give a negative Wassermann reaction, all these factors being greatly to the patient's physical as well as financial advantage.

The reactions, immediate and delayed, that we observed in the group treated with arsphenamine, are slightly fewer than in that treated with neoarsphenamine, and, most important of all, the percentage of relapses is appreciably lower. Although we have been using silver arsphenamine in increasing amounts for a number of years, we had so few cases suitable for this particular analysis that it is unfair to make definite conclusions about its value from our figures. At the present time we are focusing our study on this drug and hope that our results with a larger series of cases will be more enlightening. The statistics on the few cases in this paper would suggest that silver arsphenamine may be more desirable as an antisyphilitic remedy than neoarsphenamine.

Because in some persons an intolerance to one arsphenamine develops, it is necessary to have another for a substitute. Silver arsphenamine has the advantage, with neoarsphenamine, of being already neutralized; it has a lower toxicity than either of the other products,

and can often be given to a patient who reacts severely to neoarsphenamine or to arsphenamine. Dr. C. N. Myers has demonstrated in our service at the Vanderbilt Clinic that silver arsphenamine produces no vascular disturbance and little systemic injury.

Though the average practitioner may be convinced of the superiority of arsphenamine to any other product, he is often tempted to choose some preparation that can be given more simply. There is no doubt that arsphenamine is more trouble to administer, since it has to be neutralized and well diluted and given preferably by the gravity method; but, the welfare and cure of the patient being the first consideration, any inconvenience to the physician is negligible.

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ABSTRACT OF DISCUSSION

DR. J. FRANK SCHAMBERG, Philadelphia: The authors have pretty nearly proved that arsphenamine is therapeutically superior to neoarsphenamine, and they find that it is at least as well borne, and perhaps better borne, but one must distinguish the following points: These results apply only if one is using a single medicament. Therefore, if one uses arsphenamine or neoarsphenamine alone the work of the authors indicates that one should use arsphenamine, for the results will be better, but if one is using, as I think one should, combined or concurrent medicaments, then I think the difference can readily be made up by adjustment of dosage in size and frequency. I believe that the large percentage of medical men who are treating syphilis throughout the country will continue using neoarsphenamine, for reasons of simplicity and saving of time, for while Drs. Cannon and Karelitz and others are able to avoid the dangers of arsphenamine this is not true with respect to general practitioners. I had an opportunity of observing this personally some years ago, and I felt in those days and still feel that in the hands of the general practitioner the reactions from arsphenamine would be greater than from neoarsphenamine. Drs. Moore and Keidel published a paper some years ago showing the great importance of treating syphilis continuously during the first year or so. Last summer in several personal conferences, Colonel Harrison of London said he was convinced that his cases among the British troops contributed far fewer cases of central nervous system involvement than Moore's cases, because he employed the concurrent use of arsphenamine and bismuth, to which treatment I subscribe. It makes no particular difference what medicaments one is using; the injections may be intramuscular or intravenous, or one may use inunctions. If one uses arsphenamine and bismuth or mercury over a sufficient length of time, the results will be good. There is no outstanding, crystallized formula for the treatment of syphilis, but perseverance and regularity of treatment are the keynotes of success. Of great importance is conservatism of dosage. In 1920 the Cologne Salvarsan Commission published the fact that one out of every 18,000 injections in Germany had produced a fatal termination, and from an analysis it found that one such case occurred in every 3,000 injections of neoarsphenamine when the dose was more than 0.6 Gm. When the dose was 0.6 Gm. or less of neoarsphenamine the incidence was 1 in 16,000 injections. I am sure a large percentage of complications are due to too great doses. If one will use concurrently neoarsphenamine, or arsphenamine with bismuth or mercury compounds one may moderate the dose of each. Not all neoarsphenamines are of equal quality, as regards either toxicity or therapeutic effect.

DR. HAROLD N. COLE, Cleveland: Almost invariably in this country, in general practice, neoarsphenamine is the drug employed. As one goes into most of the large clinics one will find that arsphenamine is the drug employed. It is difficult to get a good comparison between the two preparations. For that reason, this paper by Drs. Cannon and Karelitz is of great value, and gives one an opportunity in the 5,000 patients they have gone over to see whether there is a difference in the drugs, and which one is preferable. I think that their observations show that arsphenamine is best from the standpoint of therapeutic efficiency. Apparently, the neoarsphenamine and the silver arsphenamine compare pretty well. There does not seem to be much difference between them. From the standpoint of serologic effects, there again arsphenamine is best, and following this neoarsphenamine and silver arsphenamine. When it comes to relapses, both serologic and clinical relapses, here again arsphenamine is the best drug, and neoarsphenamine and silver arsphenamine follow after it. I have not used a great deal of silver arsphenamine. I was rather surprised from the authors' figures to find the number of relapses they noted, and I am taking their figures for this to find the number of serologic and clinical relapses they noted with these drugs. Drs. Cannon and Karelitz find that with regard to toxicity there is not much difference between arsphenamine and neoarsphenamine, but they reported quite a number of rather serious reactions from neoarsphenamine in comparison with arsphenamine. For example, they reported two cases of nephritis and three cases of neuritis, and I was also surprised to find that quite a number of other reactions were reported in connection with neoarsphenamine, more than I have seen in the limited amount of preparations that I have used. The contribution is of great value. Whether it means that the general practitioner should attempt to use arsphenamine in his practice I am not sure, but I see no reason why it cannot be done. At least I could feel that he would be using a safer drug, and one that is more potent than neoarsphenamine or silver arsphenamine.

DR. C. N. MYERS, Yonkers, N. Y.: A committee of dermatologists from this group has been endeavoring to evaluate these drugs in respect to end-results. Some of these classifications in the paper may seem different from the usual group taught in this country. This paper is one of the various efforts to evaluate these drugs in terms of human reaction. Many efforts have been made to evaluate them in regard to trypanosomiasis in rats and rabbit syphilis, which are more or less comparable. It is my understanding from this paper that there may be as many reactions due to errors of technic in using neoarsphenamine as with arsphenamine, if the water is not satisfactorily prepared and the solutions are not complete in every respect. It should be remembered, also, that the authors did not discuss the use of mercury and bismuth, but they were used in these particular cases. As pointed out, the lower dosage of arsphenamine is in favor of the patient. The patient does not need to make so many visits, yet the clinical and serologic results are all in favor of the patient. I have calculated the amount of arsenical used for each of the drugs, and found for arsphenamine 3.13 Gm.; 3.73 Gm. of silver arsphenamine was used. In neoarsphenamine it required 5.54 Gm. to produce the change. In expressing these values in terms of metal content, it is found that there is 97.03 mg. of metallic arsenic in arsphenamine, 67 mg. arsenic and 52 mg. silver in silver arsphenamine, and 110.08 mg. of arsenic in neoarsphenamine. The preparation of arsphenamine is just as simple as any of the other drugs if one will take time to prepare it. During the past year my attention has been called to many clinical disturbances due to chlorination of water. It is almost impossible by means of distillation to separate the chlorine from the water. It has been our policy at the Vanderbilt Clinic to test the water for carbon dioxide and chlorine. Our preparations are all dissolved in cold sterile freshly distilled water and diluted with physiologic solution of sodium chloride and given by the careful method of gravity, which we find just as good as any and just as rapid. The paper indicates that one should give consideration to the fact that it requires fewer injections, a smaller amount of the drug and a shorter time to give a negative Wassermann reaction when arsphenamine is used, all these factors being in favor of the patient's physical well being, as well as to his financial advantage. The facts indicate that so far as possible, arsphenamine should be used in preference to neoarsphenamine.

DR. LESTER HOLLANDER, Pittsburgh: My clinical experience in the last twelve years substantiates the observations of Drs. Cannon and Karelitz. I wish to report, briefly, on six patients, two of whom are known to the Pittsburgh Dermatological Society, who received the usual treatment with neoarsphenamine in doses of 0.5 to 0.6 Gm. in combination with bismuth and mercury compounds over a period of two months or longer; their clinical symptoms did not recede under this medication. All the patients, however, when treated with arsphenamine lost all their symptoms within a reasonable length of time, I think within three weeks; this I believe is extremely

significant as far as the efficacy of the drug is concerned. As to the toxic reactions caused by the arsphenamine group of drugs, one of the most important contributory causes is found in the rapidity of their administration, along with the carelessness in the preparation of the drug for injection. Neoarsphenamine is much more easily administered and enters the circulation usually with great rapidity. I believe the rapid administration of these drugs makes them more toxic and increases the likelihood of reactions far more than when the gravity method of administration is used, as in the giving of arsphenamine. The general practitioner should avail himself of the opportunity to learn the preparation and administration of arsphenamine, for it is a much safer drug than neoarsphenamine.

DR. J. P. THORNLEY, New York: I have had experience with over 5,000 cases, and over 50,000 arsenical injections at the United States Public Health Service Hospital in New York during the past ten years. I may also say that we gave 10,000 injections of arsphenamine by the gravity method, with a dosage of 0.7 Gm. a week (0.3 Gm. on one day and 0.4 Gm. on another) before we had our first skin reaction. Then the government allowed me to use neoarsphenamine and before I had given 1,000 injections in the proportion of six to nine, and by the gravity method, we had had three cases of arsphenamine dermatitis, none of them severe. I feel that Drs. Cannon and Karelitz are justified in claiming that arsphenamine is much safer and gives fewer reactions. The only objection to arsphenamine is, as has been brought out, that a very small excess or reduction in the amount of the sodium hydroxide used makes all the difference in the world between a perfectly satisfactory result and a nitritoid reaction or injured veins.

DR. SAMUEL GOLDBLATT, Cincinnati: I wish to ask Dr. Cannon whether or not the technic of his Wassermann reaction was changed at any time during the period of his recorded results. Again, I should like to have a more definite analysis of the type of reactions; that is, what apparently caused the reactions during the use of either arsphenamine or neoarsphenamine.

DR. MARION B. SULZBERGER, New York: While not holding a brief for either neoarsphenamine or arsphenamine, I should like to ask a few questions. The results of Drs. Cannon and Karelitz show that primary lesions apparently heal more quickly and secondaries disappear sooner if the patient is treated with arsphenamine. It seems to me that these are not the most important problems in the treatment of syphilis. We may be tempted to deduce from the observations that also the late results will be better after arsphenamine treatment, but this is by no means proved. It may be important to ascertain whether the primary lesions disappear sooner, or whether the secondaries disappear more quickly, but it is of infinitely greater importance to know whether the patient is more likely to develop dementia paralytica, tabes dorsalis, or other evidences of central nervous system syphilis, and this can be established only in years to come.

DR. A. BENSON CANNON, New York: I wish to correct the impression that we used only the arsphenamines and no mercury and bismuth. We use mercury and bismuth with all our preparations, whether neoarsphenamine, arsphenamine or silver arsphenamine. The treatment was continuous and was given at short intervals. In regard to our technic of performing the Wassermann test, it was the same in all the five years that we were carrying out the investigation. So far as the study has gone for relapses, of the thirty-four patients I followed over fifteen years after treatment the number of relapses was far greater with neoarsphenamine than with arsphenamine.

A Working Truth.—All of us who are engaged in the practice of medicine have a double function; first, the mediation of such knowledge as we possess to our patients for the alleviation or cure of their ailments; and, secondly, to attempt to get nearer the goal of truth, as it applies to our problems. This "emotion of truth," when recognized, is one factor in producing the state of humility, for we are well aware that final and absolute truth is not attainable—all that is attainable is a "working truth."—Dickson, D. E.: Humility in Medicine, *Edinburgh M. J.* **38**:529 (Sept.) 1931.

THE PRESENT STATUS OF THE ANESTHESIA PROBLEM *

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This paper is the report of a clinical research in the use of anesthetics, which has been carried on in the surgical clinic at Rush Medical College for more than thirty years. This research was undertaken for the purpose of determining the safest, simplest and most efficient anesthetics for use in general surgical work.

In this research, it was found necessary to formulate a scheme of measurement, a yardstick, which could be employed in measuring the various anesthetics and anesthetic methods. The yardstick which was adopted to test the various anesthetics and anesthetic methods and combinations is made up of the following nine requirements:

1. The safety of the patient.
2. The comfort of the patient.
3. The efficiency of the anesthetic agent.
4. Control, avoiding anesthetics which cannot be withdrawn at the first sign of danger.
5. The elimination of psychic trauma through the abolishing of both pain and consciousness.
6. The simplicity and general adaptability of the method.
7. The absence of injurious effects on the organs, tissues and blood.
8. The absence of complications, such as vomiting, headache and delirium.
9. The absence of effects that lower the resistance to organisms such as pneumococci and streptococci.

During the last few years, especially, there has been a period of unrest in anesthesia. Some men, in particular those with little clinical experience and men lacking judicial minds, have adopted and advocated new anesthetic agents and methods of anesthesia, some of which I believe should be criticized and rejected.

It is my purpose to review briefly the subject of anesthesia, to test the various anesthetic agents by the scheme of measurement which my associates and I have devised, and to attempt in a judicial way to determine what anesthetics are today the safest, most efficient and most practical for use in a general surgical clinic. Such an analysis necessarily covers a wide field and represents an exhaustive review of the literature as well as an analysis of our own work. In this brief paper it will be possible to present simply the essential facts of this study with a summary of conclusions.

We have analyzed the following anesthetics and anesthetic methods: chloroform; ether; nitrous oxide gas; ethylene gas; scopolamine and morphine; avertin; amytal and pernocton; spinal anesthesia; infiltration anesthesia; blocking; intravenous anesthesia, general and local; intrarectal anesthesia; intratracheal anesthesia, and intrapharyngeal anesthesia.

We have studied also the subject of mixtures, sequences and various combinations, and have measured each one of these by the yardstick of nine points.

THE VOLATILE ANESTHETICS

Chloroform by Inhalation, Open Drop Method.—1. Chloroform is the most dangerous of all inhalation

* This article has been slightly abbreviated for publication in THE JOURNAL. A reprint containing the complete article will be sent by the author on request.

* Read before the Section on Surgery, General and Abdominal, at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

anesthetics. Deaths on the operating table range from 1 in 1,000 to 1 in 3,000. Chloroform is not inflammable or explosive. In the presence of a naked flame it decomposes and forms hydrochloric acid and phosgene, one of the most dangerous gases known. Several accidents have occurred from this gas, both patients and operator suffering from severe poisoning.

2. Chloroform is a most agreeable anesthetic to the patient.

3. Chloroform is the most efficient anesthetic, anesthesia and relaxation being profound and complete.

4. The anesthetic can at once be stopped on the appearance of danger signals, but the chloroform already in the system cannot be rapidly eliminated, and the effects persist for a considerable period. The margin between the required anesthetic dose and the toxic dose is too narrow for safety.

5. It produces complete unconsciousness and eliminates psychic trauma.

6. Simplicity and general adaptability are all that can be desired.

7. The after-effects on the blood tissues and on the viscera are the reduction of hemoglobin and the production of what is now generally recognized as late chloroform poisoning, with fatty degeneration of the liver, kidneys and muscle tissue, which is usually fatal.

8. Vomiting occurs in about one third of the cases, and lung complications and nephritis in a small percentage.

9. Chloroform reduces resistance against pus organisms, pneumococci and the like.

Because of its efficiency, comfort and simplicity, chloroform has probably been employed more generally the world over than any other anesthetic, possibly more than all other anesthetics combined. Yet the time has come when chloroform in spite of its many advantages should be generally discarded because of the large mortality attending its use both on the operating table and in late chloroform poisoning, and because there are for all classes of surgical cases efficient and much safer agents. It is possible that, in military surgery, chloroform may still find a legitimate place. An example of its usefulness in military practice is the experience of Breitner, of Eiselsberg's clinic of Vienna, in the World War, who used chloroform in 3,000 operations in a prison camp in Siberia without any expert anesthetists and without a single death from the anesthetic.

Ether by Inhalation, Open Drop Method.—1. Ether is the safest anesthetic agent known for prolonged anesthesia and complete relaxation. Deaths range from 1 in 5,000 to 1 in 10,000. Ether vapor is extremely inflammable when mixed with air or oxygen and should not be used in the presence of a naked flame or cautery.

2. Ether is not an agreeable anesthetic to take, especially by the closed methods; it is much more agreeable in expert hands by the open drop methods.

3. It is very efficient; complete anesthesia and relaxation can be obtained.

4. The anesthetic can be stopped on danger signals, and the agent can be fairly rapidly eliminated, if necessary, under artificial respiration. The margin of safety between the anesthetic dose and the toxic dose is wide.

5. It produces complete unconsciousness and eliminates psychic trauma.

6. Simplicity and general adaptability by the open drop method are all that can be desired.

7. Ether reduces hemoglobin, slightly increases coagulability of the blood, and produces few, if any, cases of injury to the liver, kidneys and muscle tissues such as occur from chloroform.

8. Vomiting occurs in from 30 to 40 per cent of cases, and lung complications and nephritis in a small percentage of cases.

9. Ether reduces slightly resistance against pus organisms, pneumococci, and the like.

Ether by the open drop method is the safest general anesthetic known for producing prolonged anesthesia and complete relaxation. It should be today the standard anesthetic in the surgical clinic. The discomfort of ether anesthesia when properly given by the open drop method by an expert can be greatly reduced. It can be practically eliminated by the sequence of gas-ether, either nitrous oxide or ethylene, which we employ in our clinic. The closed method of giving ether is not as satisfactory or as safe as the open drop method. Complicated apparatus to control the percentage of ether and to warm ether do not possess any advantages over the simple drop method and should be discarded. The giving of ether by the drop method is an art which must be acquired under the instruction of an expert.

Nitrous Oxide Gas and Oxygen.—1. Nitrous oxide gas and oxygen for short anesthesias, such as for pulling teeth and opening abscesses, is, with the possible exception of ethylene, the safest general anesthetic known. In prolonged anesthesias, a half hour or more, nitrous oxide gas is now known to be more dangerous than ether or ethylene. I refer now to the use of gas and ether in the hands of experts. In nonexpert hands, gas in prolonged anesthesias is much more dangerous than ether.

Nitrous oxide gas should be one of the general anesthetics employed in the surgical clinic, especially in operations in which a cautery or high frequency knife is used. In our own clinic, nitrous oxide has been almost entirely displaced by ethylene.

Ethylene-Oxygen Anesthesia.—On March 11, 1923, Professor Luckhardt of the department of physiology of the University of Chicago demonstrated on himself and several of his assistants the anesthetic properties of ethylene and oxygen to some members of our surgical department, including myself. Three days later I used it for the first time on patients.

We have now used it in the Presbyterian Hospital in more than 20,000 cases without a death. It has with us almost entirely displaced nitrous oxide because it is more efficient and, we believe, safer, since the patient can be kept anesthetized under ethylene indefinitely and yet receive enough oxygen to remain pink in color, without any cyanosis.

Applying the nine points to ethylene:

1. We believe that it is the safest of all anesthetics for general use, for the reasons just stated. It is explosive and forms an explosive mixture in a concentration of 3.3 per cent of ethylene with 96.7 per cent of air. The danger of explosion can be avoided, however, by having no naked flame or cautery in the operating room and by taking some simple precautions which will eliminate the dangers of static spark. If these precautions are taken, ethylene can be used as safely as an anesthetic in a surgical operating room as gasoline can be used as the source of power in an automobile. We had in our surgical department a number of explosions of ethylene and nitrous oxide and ether from static spark: three from ethylene, two from nitrous oxide, and one fire from ether caused by a fulgurating apparatus.

Fortunately, no one was injured in any of these accidents.

We have devised a simple scheme to prevent the possibility of static spark in the operating room. The plan consists of the following: We place in the center of the operating room a steel plate made of nonrusting furniture steel, 9 by 12 feet, and about three-sixteenths inch in thickness. This is made up of three plates, each one of which is 9 feet long and 4 feet wide. These are fastened together by a metal strip and copper rivets. The plate is connected with the metal plumbing in the room by copper wire which is covered by a thin metal strip protecting it against injury. On this steel mat are placed the operating table and gas machine. The entire operating staff stands on this mat. Chains are dropped from the operating table and the gas machine to the metal mat so as to make a direct contact. A small metal plate, the size of one's hand, is placed under the patient, and a strip of metal mesh runs from this plate to the under side of the operating table, making a direct connection of the patient with the metal table. A thin coat of mail is used as a covering for the rubber bags, and the breathing tube is connected to the metal frame of the gas machine.

We have used this plan in a large number of cases of ethylene anesthesia (in more than 20,000), and this experience confirms the belief that this system of grounding and electrical interconnection does prevent electrostatic sparks. We have had no further explosions since we introduced this system of grounding.

In the new operating rooms which have been built in our hospital since we devised this system, we have been able to devise a system of grounding that is very simple and does away with the metal mat. We have used as a floor a cloisonné terrazzo and while they were making this terrazzo we had put in the terrazzo floor brass strips, 4 or 5 inches apart, which gave the floor a very handsome appearance as though it were made up of tiles of these dimensions. This grill of brass strips is electrically connected and grounded to the steam pipes. This plan has seemed to be as efficient as our metal mat and has the advantage of producing a very good looking floor for the operating room. The general scheme is drawn in outline in the accompanying illustrations.

Those who are interested in introducing this plan into hospitals I refer to Dr. Isabella C. Herb, chief anesthetist at the Presbyterian Hospital, who has been in charge of our anesthetic work for more than twenty years and who has been, more than any one else, responsible for the development of the safe and efficient method of using ethylene.

2. Ethylene has an odor but it is not very disagreeable or irritating to inhale.

3. Ethylene and oxygen are very efficient in producing profound anesthesia as far as freedom from pain and complete unconsciousness are concerned. When complete relaxation of the abdominal muscles is not required, ethylene is in itself an ideal anesthetic. When, however, complete relaxation of the abdominal muscles is necessary, ethylene must often be supplemented by the required amount of ether. Anesthesia can be maintained with from 80 to 85 per cent of ethylene and from 15 to 20 per cent of oxygen.

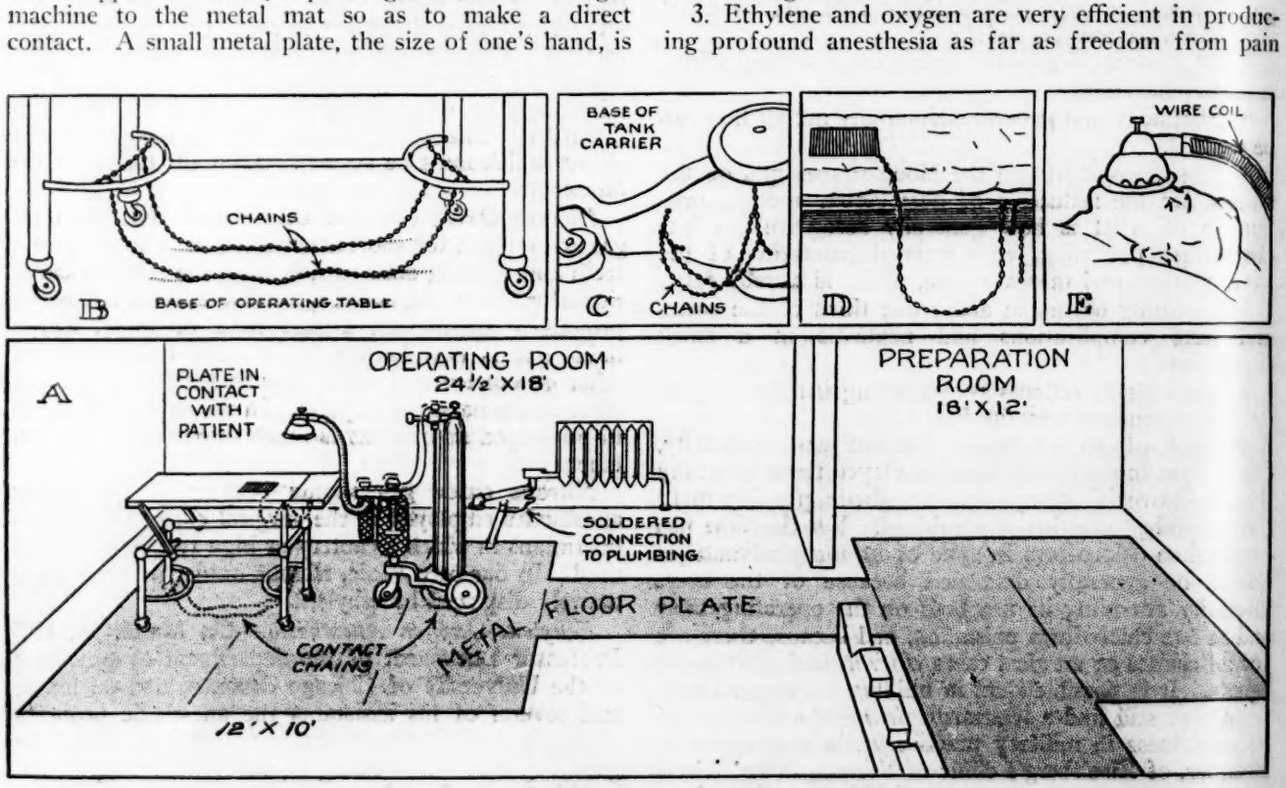

Fig. 1.—System of grounding in operating rooms at Presbyterian Hospital: *A*, floor plan of operating room and preparation room; the steel mat with chains dropping down on the mat from the operating table and the gas machine; the copper plate and wire connecting the steel mat with the heating system. *B*, chains connecting operating table with steel mat. *C*, chains connecting gas machine with steel mat. *D*, metal plate with wire chain attached to operating table placed directly under the patient. *E*, coil of wire inside of rubber tubing of gas machine.

4. The ethylene can at once be stopped at the first sign of danger and rapidly eliminated from the patient.

5. Does it abolish pain and consciousness? Yes, in a most satisfactory way. It is the most humane of all anesthetics, capable of safely producing prolonged anesthesia.

6. Its simplicity and general adaptability are the same as those of nitrous oxide.

7. There are no after-effects on blood, tissues and viscera.

8. Vomiting occurs in a minority of the cases.

9. It has little or no influence on immunity.

PREANESTHETIC MEDICATION AND BASIC ANESTHETICS

As early as 1869, Claude Bernard introduced the use of morphine before giving a general anesthetic; he demonstrated the fact that in this way the amount of chloroform or ether required to produce anesthesia could be definitely reduced probably one third.

Scopolamine and Morphine as an Anesthetic.—1. The combination of scopolamine and morphine formed a very dangerous anesthetic, so dangerous that it has been generally discarded by general surgeons and was retained for a time by a few enthusiastic obstetricians, the Freiburg school. It was exploited as the "twilight sleep." The exploitation occurred not only in medical journals but also in the lay press. A thorough research on scopolamine and morphine was made by the obstetric staff of the Michael Reese Hospital in Chicago and reported by Baer.[2] This investigation showed that scopolamine and morphine should be rejected absolutely and finally as too dangerous, not efficient and as complicating the process and threatening the asepsis; in short, the same conclusion that was arrived at by general surgeons.

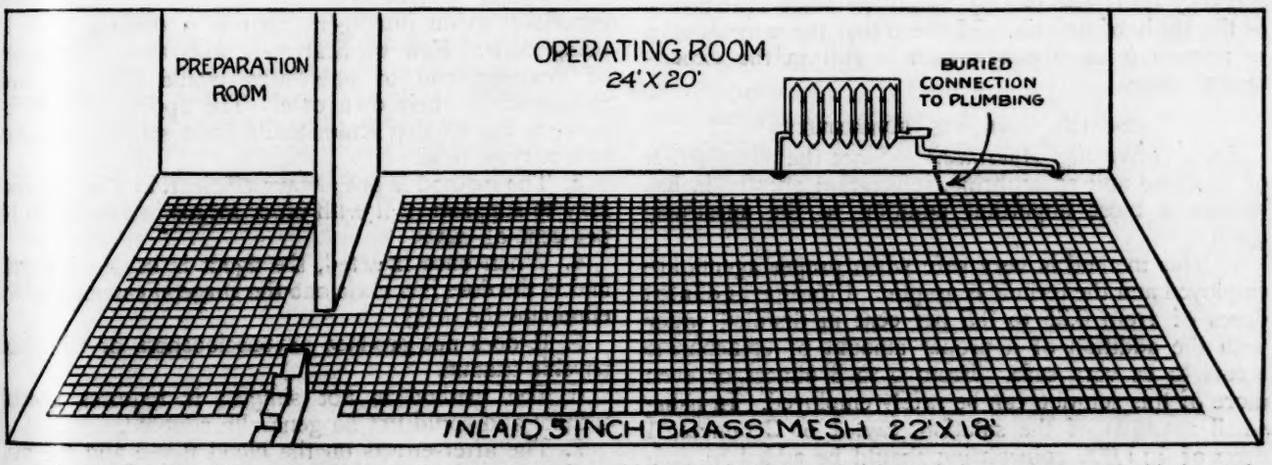

Fig. 2.—Floor plan in new operating room showing terrazzo floor with brass strips; brass strip inlays 5 inches apart connected with the metal heating pipes by copper wire laid under the cement. This does away with the steel mat and makes a handsome looking floor.

The evidence from the literature shows beyond question that, even in small doses, ¼ grain (16 mg.) of morphine and $\frac{1}{150}$ grain (0.4 mg.) of scopolamine before chloroform, ether or gas adds distinctly to the risks of the patient. It complicates the giving of the general anesthetic. It masks danger signals. It adds to the percentage of vomiting and inability to void urine. It carries with it no advantage and many disadvantages and should be rejected. Scopolamine and morphine as an anesthetic agent has now been generally abandoned. I introduce it here because I believe that it can be regarded as a forerunner of the basic anesthetics avertin and amytal and pernocton anesthesia, methods of anesthesia which are now being widely experimented with and enthusiastically advocated. I believe that these new agents will meet with the same fate as scopolamine anesthesia and will be eventually discarded.

Avertin, or Tribrom-Ethyl Alcohol.—The use of avertin as an anesthetic began in 1926. At first it was employed as a complete anesthetic but this was followed by so many deaths that it was discarded as a complete anesthetic, and surgeons began to use it, as scopolamine and morphine had been employed, as a basic anesthetic to be followed by local anesthesia or ether or gas.

Avertin has been used now in Germany in over 400,000 cases, and a very voluminous literature has been written on the subject in the last three years. At present a heated discussion is going on, especially in Germany, for and against the use of avertin. Probably the most extensive review of the subject is in the twenty-third volume of the *Ergebnisse der Chirurgie und Orthopädie*, published in 1930. This is written by Anschütz and Specht, of the surgical clinic at Kiel, and Niemann, of the medical clinic. The article is an exhaustive one of 200 pages and contains the bibliography to date. The article, as a whole, is sympathetic to avertin anesthesia. The conclusions arrived at, however, are not very hopeful. I quote the gist of these conclusions:

> It is hard to prophesy the fate of avertin anesthesia. Will it disappear entirely from surgery as morphine and scopolamine twilight sleep has done, or will it after it has been widely employed be limited to a narrow field, as we find today has occurred with lumbar anesthesia? We do not believe that the last will occur, rather the first. Whether avertin will be replaced by some other better substance one cannot say, but it is not improbable. Psychic protection is good but somatic protection is better; but we certainly believe that, because of the present general employment of avertin anesthesia, even though this sinks into oblivion, the principle of hypnotic anesthesia will long remain the ideal.

Avertin anesthesia, measured by the yardstick of nine points, gives the following results:

1. It is not at all safe as a complete anesthetic and not very safe as a basic anesthetic. In this respect it runs parallel with scopolamine and morphine.
2. It is most comfortable to the patient, and an almost ideal sleep is secured in from five to twenty minutes.
3. Avertin is very efficient.
4. There is little or no control after the solution is once thrown into the bowel, and this is the serious objection to the agent.
5. Does it abolish both pain and consciousness? Yes, if the dose is sufficiently large; if not, local anesthesia or ether or gas must be added.
6. It is not very complicated, but the technic must be perfect or serious injury may result.

2. Baer, J. L.: Scopolamin-Morphin Treatment in Labor; A Critical Analysis of Sixty Cases, J. A. M. A. 64:1723 (May 22) 1915. Baer says that the excessive thirst, headaches which are so distressing, the difficult control of patients, the risks of infection from soiling, the blurred vision, the ghastly deliriums constitute so severe an arraignment that "we feel compelled to condemn it."

7. There is evidence to show that it can injure the liver.

8. It seems to be very free from complications such as vomiting. It is often necessary, however, to catheterize the patient.

9. It has little effect on immunity.

It seems to me that the wide employment of avertin must be opposed, especially because the physician has practically no control after it is once introduced into the rectum; because the patient may sleep from six to twelve to thirty hours; because, unless the technic is perfect, the administration of avertin may be followed by injury to the bowel mucosa; because the use of avertin carries with it a large mortality, and because we have here in America better and safer anesthetics which can be used in all operations and which are under better control. The elimination of psychic trauma can be secured, when desired in a much better and safer manner with the gas anesthetics, nitrous oxide gas and ethylene. If avertin is to be used at all, it should be limited to a narrow field where it has especial advantages. In a recent article by Dandy of Baltimore its value in brain surgery is emphasized.

An analysis of amytal used intrarectally or intravenously leads one to very much the same conclusions as the study of avertin. I believe that the same applies to pernocton anesthesia, which is still in the experimental stage.

COCAINE AND ITS SUBSTITUTES

Local Infiltration Anesthesia.—Since the introduction of procaine and epinephrine, infiltration anesthesia has become a most important addition to the anesthetic agents.

1. This method is very safe when proper agents are employed and the technic is aseptic. Procaine in diluted doses of from 0.25 to 0.5 per cent in distilled water with the addition of a proper amount of epinephrine seems to be very safe. From 6 to 8 ounces or even more of this solution can be safely employed. In using small amounts of the solution, say, 1 or 2 ounces, 1 drop of 1:1,000 epinephrine should be added to each 200 drops of the 0.5 per cent procaine solution; in using larger amounts, from 6 to 8 ounces, a total of not more than 20 drops of epinephrine should be used. I can find no report of a fatality from 0.25 or 0.5 per cent of procaine. The addition of the epinephrine is most important. It produces a local anemia which prevents rapid absorption and therefore makes the effect both safer and more prolonged. The epinephrine also reduces the bleeding to surprisingly small proportions.

A very definite warning should be given in regard to the use of epinephrine in too great concentration. Epinephrine in what is apparently a very weak solution is capable of producing necrosis of the tissues. I have not seen necrosis when the epinephrine has been 1:100,000; that is, 1 drop to 100 drops of the procaine solution. I believe on the whole, however, that a safer rule would be 1:200,000; that would be 1 drop to each 200 drops of the procaine solution.

I believe that local anesthesia with procaine and epinephrine is a very safe and satisfactory method which should be employed in a large group of cases. I do not believe that the range of local anesthesia should be stretched too far. I am using it in about 30 per cent of my cases.

BLOCKING

By blocking I mean the attempt to anesthetize the field of operation by infiltrating the nerve supply of the part proximal to the site of operation, as blocking the splanchnic nerves, the gasserian ganglion, the brachial plexus, the great sciatic and anterior crural, or the internal pudic.

Blocking has a limited field. Blocking of the gasserian ganglion, brachial plexus, and the like should be rejected. These are in themselves important surgical procedures and cannot compete at all with the simpler and safer methods. In dental surgery the blocking of the inferior dental and branches of the superior dental nerves has a very useful field. As a rule, nerve blocking should be limited to the blocking of nerves which appear in a dissection made under local infiltration anesthesia, as blocking the ileo-inguinal nerve in a hernia operation done under local anesthesia.

SPINAL ANESTHESIA

1. Spinal anesthesia is very dangerous, more so than chloroform. Nine deaths occurred in the first 1,000 cases, and although it is difficult to give absolute statistics, there is probably more than 1 death in 500 cases. There were 14 deaths in Greater Boston in the year 1928 in 1,900 cases collected and reported by one of the anesthetists from the Lahey Clinic, Dr. Lincoln F. Sise.

2. Spinal anesthesia is not a comfortable method, especially to an intelligent man who realizes what is being done. Few medical men with their knowledge of anatomy and of anesthesia would choose spinal anesthesia in their own case. The application, therefore, of the Golden Rule should limit spinal anesthesia to a narrow field.

3. The method is not always efficient, and it is necessary to supplement it with other means in from 5 to 10 per cent of cases.

4. When once injected, the agent is beyond control, and if the dose is a toxic one the surgeon cannot rapidly eliminate the drug.

5. It does not produce unconsciousness or eliminate psychic trauma.

6. The method is not simple; it requires special technic and could not be generally adopted.

7. The after-effects on the blood tissue and the viscera are largely expended on the cord, and appear as cord injuries, the so-called aseptic meningitis.

8. The complications are those already described as well as especially persistent and severe headaches lasting for days and weeks.

9. Spinal anesthesia has no effect on immunity.

Spinal anesthesia may have a proper place in a very limited field. It is difficult for me to visualize a field of any extent in which spinal anesthesia is properly the anesthetic of choice.

SPECIAL METHODS OF USING ETHER

Intrapharyngeal Ether Anesthesia.—This is an old method introduced years ago and reintroduced from time to time with changes in apparatus. Souchon developed a simple apparatus. A catheter was introduced through the nose or mouth into the pharynx, and with a hand bulb ether vapor was introduced. Potts, one of my assistants, invented a simple foot bellows to drive the ether vapor. Dr. Isabella Herb has made an apparatus in which the ether vapor is forced by a small air pump driven by an electric motor taking its power from the ordinary electric light plug. The special advantage is that in mouth and jaw work after the patient has been anesthetized by drop ether the mask can be removed, the catheter introduced into the pharynx through the nose or mouth and anesthesia continued without interfering with the operative field.

In our clinic this method is frequently employed in oral surgery, especially on cleft palate.

Intratracheal Ether Anesthesia.—This interesting method, introduced by Meltzer and Auer, has not as yet been used in a very large series of cases.

1. Robinson collected reports of 1,400 cases, 7 of which terminated fatally, 1 from lung rupture and 1 from emphysema.

The method is dangerous. It is complicated and it possesses advantages in a very few cases. When it was introduced it was welcomed as a simple method which had all the advantages of the complicated differential pressure methods which had been experimented with in thoracic surgery. As a matter of fact, both the complicated differential pressure and the intratracheal methods have practically been largely eliminated, as a result of further investigations in thoracic surgery which have demonstrated the facts that most of the operable cases in thoracic surgery can be done under local anesthesia, drop ether, ethylene or nitrous oxide and oxygen; that the necessity of preventing collapse of the lung when but one pleural cavity is opened was largely theoretical and not real, and, lastly, that in the extensive work in which both pleural cavities are involved collapse of the lung can be prevented or controlled by the proper use of ether and oxygen gas machines. Furthermore, the introduction of the simpler method of intrapharyngeal anesthesia has largely eliminated the intratracheal method from the field of head surgery, in which for a time it seemed to have a place. On the whole, therefore, intratracheal anesthesia has a very limited field in practical surgery.

Intrarectal Ether Anesthesia.—This is an old method introduced as early as 1847 and revived from time to time.

1. It is not a safe method.
2. It is not an uncomfortable method of taking ether.
3. It is not always efficient.
4. Control is practically lost.
5. Intrarectal ether anesthesia produces unconsciousness and eliminates psychic trauma.
6. The method is more complicated than ether by inhalation.
7. The after-effects on the blood and tissue are the same as in inhalation anesthesia.
8. The complications consist of distention of bowels and very severe local irritation of the colon with colicky pains and bloody diarrhea, sometimes fatal.
9. The effects on immunity is the same as that of ether inhalation.

Rectal anesthesia should be rejected, or, if employed at all, it should be limited to a very narrow field.

Intravenous Anesthesia.—Intravenous anesthesia has been employed in a number of ways and with the use of a number of anesthetic agents. For a limited period, intravenous ether anesthesia was employed in some of the German clinics. I saw it used in Kümmell's clinic in Hamburg and it seemed very efficient. It was, however, within a short time discarded because of the risks of embolism and thrombus and because, after it was injected into the vein, control of the agents was lost. Amytal and various other agents have recently been employed by the intravenous method. I believe that the intravenous methods of anesthesia should be generally discarded, first, because of the loss of control of the anesthetic agent that is injected into the blood stream and, secondly, because of the possibility of such accidents as thrombus and embolism.

CONCLUSIONS

Measuring this whole subject with the yardstick which we have adopted, one must conclude that there are a few safe and simple and efficient methods that can at all times be kept under the control of the surgeon and his anesthetist, that can be made to answer and answer perfectly well in all surgical operations; so well that there is very little excuse for the employment of the more dangerous methods which are unfortunately at present being widely employed.

These safe and simple methods are ether, ethylene and nitrous oxide, and local anesthesia.

This may be tested out by going over the entire body from the crown of the head to the soles of the feet and asking what are the safest, most efficient and best methods to employ in the various regions of the body. W. W. Keen in an "Ether Day Address" presented a thought which should be constantly kept in mind in considering the choice of the anesthetic. He said, "The ideal anesthetic will abolish pain by the abolishment of consciousness but without danger to life." We must consider the mind as well as the body of the patient.

In operations on the skull and brain, ether is in America the anesthetic of choice when the surgeon desires to abolish both pain and consciousness. Many British surgeons prefer chloroform. Local anesthesia has a wide field in cases in which it is possible to secure the cooperation of the patient and complete the operation by simply eliminating pain without abolishing consciousness. Harvey Cushing and Charles Frazier are doing many of their brain tumor operations under local anesthesia, supplemented by the use of nitrous oxide or ether during the steps of the operation which are very trying and painful to the patient. I can see here, as suggested by Dandy, a very proper place for the employment of avertin, as it would produce the desired unconsciousness and would permit the use of the high frequency knife.

In operations on the face and neck, local anesthesia can be employed to advantage in a large field, in removal of carcinoma of the lower lip, removal of the tongue for cancer, fracture of the nasal bones and malar bone, removal of the larynx for cancer, ligation of the great vessels of the neck, removal of the esophageal diverticula, and other operations. In cases in which the psychic element must be considered, as in exophthalmic goiter, it is more humane to use a gas anesthesic, such as nitrous oxide or ethylene and local anesthesia.

Operations on the thorax and removal of the breast can be done best under ethylene. Operations such as resecting the rib for empyema are best done under morphine and local anesthesia, plus ethylene when required. Draining a pericardial collection of pus is best done in the same way. Operations on the spine, laminectomies, and the like are best done under ethylene; in doing spina bifida operations on infants local anesthesia is used.

In abdominal surgery, as a rule, operations between the umbilicus and the diaphragm are done best under the sequence of ethylene or nitrous oxide and ether. This includes operations on the diaphragm, stomach, spleen, liver, bile tracts and pancreas. Some exceptions, of course, are to be made: local anesthesia should be used for infants with congenital pyloric obstruction, for jejunostomy done to feed patients with massive hemorrhage from peptic ulcer, and in some gallbladder and stomach cases when ether is definitely contraindicated. As a rule, operations below the umbilicus in the lower

portion of the abdomen and in the pelvis, and kidney work can be well done under ethylene, perineal work and rectal work under local anesthesia or ethylene, hernia work under local anesthesia or ethylene, operations on both male and female genitalia under local anesthesia or ethylene, and all extremity work under ethylene or local anesthesia. Local anesthesia works admirably in reducing fractures as demonstrated by Boehler's work in Vienna. In such cases, when it is desirable to eliminate psychic trauma, ethylene should be used.

The logic of this scheme of anesthesia is clear and simple. The three anesthetic methods, local, gas anesthesia, nitrous oxide or ethylene and ether, can all be retained under good control; i. e., the anesthetic agent can be stopped at the first sign of danger and in the case of ether and the gas anesthetics can be eliminated rapidly if necessary by artificial respiration. In the case of local infiltration and block anesthesia, fortunately, used in proper strength and amount, there is little danger of toxic effects. A sequence of these three anesthetic measures can be employed so that both anesthesia and abolishment of consciousness can be produced when desired. They can also be employed in such sequence that one can secure the abolishment of pain and of consciousness, and complete relaxation. As an example, in abdominal surgery one can in a given case begin with local infiltration and make the abdominal incision. It is then noted that the patient is mentally distressed; consciousness is abolished with ethylene, and it is discovered that the conditions found at operation demand complete relaxation, which is secured with ether.

One should never attempt to cover a wider field with an anesthetic than it can properly and easily cover. The patient's psychology as well as his safety should be considered. The anesthetic should be employed so that the patient has no pain and no psychic trauma. The one reason for the wide use of avertin in Germany is that avertin puts the patient to sleep and renders him unconscious of the operation. It is a reaction against the carrying of local anesthesia, which they have been employing for some years, to a brutal extreme and forcing it to cover altogether too large a field, and they have not until recently given enough consideration to the wishes of the patient and to the question of psychic trauma.

THE TRAINED ANESTHETIST

Anesthesia must be placed in the hands of trained experts. The trained expert anesthetist is an absolute necessity in a well organized surgical clinic. Women physicians make excellent anesthetists; they are, I think, as a rule, better than men and better than trained nurses. Women doctors, I have found, are especially fitted for this work, and it offers medical women a very interesting and profitable field. The trained anesthetist in America is now more generally recognized as an essential member of a well organized operating team than anywhere else in the world. This is one of the reasons for the fact that so much better work is being done in America in anesthesia than is being done in other countries. Anesthesia is such an important part of surgery that it must always remain in the control of the surgeon. The surgeon is responsible for the entire operation, including the anesthetic. He must decide on the anesthetic and see that it is properly given.

SUMMARY

This means that the use of chloroform, of intraspinal anesthesia, of intravenous anesthesia, of intrarectal anesthesia, of intratracheal anesthesia and of the so-called basic anesthetics, such as scopolamine, avertin and amytal must be limited to very narrow fields. Fortunately, local anesthesia, gas anesthesia and ether afford three anesthetic measures which, if handled by an expert can be used alone or in sequence, with abolition of pain and, if desired, the abolition of consciousness and, when required, complete relaxation, and can secure complete and safe anesthesia for any and all surgical operations. This places anesthesia on a very unpretentious, simple basis, but here, as in all fields of surgery, it finally becomes apparent that simplicity is near truth. The general adoption of this simple scheme of anesthesia will prevent many anesthetic accidents and save many lives.

122 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

SUBMUCOUS URETERAL IMPLANTATION INTO THE BOWEL: TWENTY YEAR REPORT ON THE FIRST HUMAN CASE

GEORGE W. MIDDLETON, M.D., SALT LAKE CITY

An outstanding surgical advance of recent years has been the development of a method of implanting the ureters into the bowel which reduces to a minimum the danger of ascending renal infection. The present technic depends for its success on valve action secured by having the ureter run for a distance between the muscularis and the mucosa before penetrating the lumen of the bowel.

Coffey[1] conceived the application of the valve principle to transplantation of the bile duct and ureters into the bowel. He also proved its value by animal experimentation. A large number of successful transplantations of the ureters by C. H. Mayo, Coffey and others are now on record. The chapter concerning ultimate results remains yet to be written. On this account the subjoined report of the first human case in which the modern method was used is of considerable interest.

The first case on record in the literature is apparently that of C. H. Mayo,[2] who operated on a child for exstrophy of the bladder, transplanting the right ureter, Feb. 3, 1912, and the left ureter, Feb. 23, 1912. The present previously unreported case, in which both ureters were transplanted at a single operation, antedates this by almost a year.

REPORT OF CASE

R. F., a youth, aged 17, presented himself for treatment early in 1911 in the usual wretched condition of sufferers from exstrophy of the bladder. In spite of the rarity of the condition, I had recently (1910) performed the Peters operation on another patient and had been gratified with a brilliant immediate result. While the result still seemed a complete success and before the subsequent fatal pyelonephritis had developed, the second patient was operated on by the same method. Unfortunately, or in retrospect most fortunately, one of the rosets pulled out of the rectum on the ninth day. This necessitated some other line of attack.

Just at this juncture, Coffey[1] published his experimental work on dogs in which he reported successful transplantation of the common bile duct and ureters by carrying them through the intestinal wall in a slanting manner to provide a valve mechanism. This gave the desired clue. After due preparation by clearing the alimentary canal and giving the patient methylene blue (methylthionine chloride U. S. P.) to make recognition of the ureters easy, a laparotomy was performed, March 1, 1911. A midline incision was made, and each ureter was freed from its distal attachment for a distance of 2¼

1. Coffey, R. C.: Physiologic Implantation of Severed Ureter or Common Bile Duct into Intestine, J. A. M. A. **56**: 6 (Feb. 11) 1911.
2. Mayo, C. H., and Walters, Waltman: Transplantation of Ureters into Rectum, J. A. M. A. **82**: 624 (Feb. 23) 1924.

inches. The ends of the ureters were split, and to each corner so produced was applied a linen thread with an intestinal needle attached. The sigmoid colon was brought to the midline, incisions were made in two of its longitudinal bands through all the structures down to, but not through, the mucous membrane. At the extreme lower ends of these incisions, small openings were made in the mucosa. The ureters were laid in the corresponding troughs in the bowel wall and their distal ends pulled into the lumen of the bowel. This was accomplished by passing the needles attached to the split ends of the ureters through the openings in the mucous membrane at the lower angle of each incision and bringing them from within outward through all the coats of the bowel about one-half to three-fourths inch below. The ureters were drawn freely into the lumen of the bowel and anchored to its side. The muscular and serous coats were stitched securely with fine linen thread over the ureters as they lay in the troughs for the full length of the incisions. By this arrangement, about 1¼ inches of the ureter traversed the bowel wall with only the mucous membrane between it and the free lumen. The right ureter was placed at a lower level in the colon than the left one.

The patient made a good postoperative recovery and has enjoyed vigorous health since. Control of the bowel is perfect. He retains his urine during the entire night and defecates every four or five hours during the daytime. At subsequent operations the bladder was removed, the abdominal wall closed and reconstructive work done for epispadias. He has since married and is the father of two normal healthy children.

Recent intravenous pyelograms showing normal renal pelves with absence of hydronephrosis.

Recent physical examination shows the patient to be in excellent condition. There are no symptoms or renal impairment. The blood pressure is 110 systolic and 80 diastolic. The heart is normal, with a rate of 72 per minute. Blood urea nitrogen is 32 mg. per hundred cubic centimeters. Films following a recent injection of iopax show essentially normal renal pelves with absence of any noteworthy degree of hydronephrosis. There remains a small fistulous tract over the region of the trigon which discharges a slight amount of vesicular secretion. In the past year, several attacks of epididymitis have occurred on the left side. These were relieved by left vasectomy in December, 1930.

The elevation of blood urea nitrogen with absence of other observations to suggest renal insufficiency is worthy of note. Mayo[3] observed that some elevation of blood urea is to be expected following uretero-intestinal implantation. He attributes it to absorption of urea from the sigmoid rather than to renal impairment.

The patient was 17 at the time of the operation and is now 37 years old. During childhood he was a social outcast because of the intolerable odor set up by decomposition of the urine which constantly soiled his clothes. He is now a successful business executive and seems to get as much satisfaction out of life as if he had never been born with this otherwise blighting malformation.

75 South Main Street.

3. Mayo, C. H.: Treatment of Exstrophy of the Bladder, Proc. Staff Meet., Mayo Clin. 5: 316 (Nov. 5) 1930.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

SYNEPHRIN TARTRATE. — Hydroxyphenylmethylaminoethanol Tartrate.—Parahydroxyphenylmethylaminoethanol Tartrate. — Dextro-α-4-hydroxyphenyl-β-methylaminoethanol Tartrate. — Dextro-α-hydroxy-β-methylamino-4-hydroxy ethylbenzene Tartrate. — $(HO\,C_6H_4CHOH\,CH_2NHCH_3)_2.C_4H_6O_6$.— The tartrate of an alkaloid obtained synthetically.

Actions and Uses.—Synephrin tartrate is used as a vasoconstrictor. It is less toxic than either epinephrine or ephedrine, and its vasoconstrictor action, while not so pronounced as that of epinephrine, endures for a longer time. In combination with procaine hydrochloride, it is useful for local anesthesia in dental operations and in minor surgery in cases in which a bloodless area is not required. Clinical experience indicates that it is about one fiftieth to one hundredth as active as epinephrine. Its reaction on smooth muscle causes relaxation of the intestines and of the bronchial tubes, dilates the pupil, and increases the muscular tone of the uterus. Injected into rabbits, it produces a hyperglycemia from one to two hours after the injection; also a slight glycosuria. Applied to mucous membranes, it causes contraction of the capillaries, thus reducing swelling and congestion of such membranes. For the same reason it is used for shrinking swollen turbinates. When used in the nose it is stated not to have a tendency to cause local irritation or sneezing. Injection of a solution of synephrin tartrate, 1 per cent, with procaine hydrochloride, 2 per cent, induces local anesthesia of about thirty to forty minutes' duration. In hay fever and asthma, synephrin tartrate administered orally or hypodermically has given relief in mild attacks and has relieved the coughing spasms of asthma and of pertussis.

Dosage.—From 0.1 to 0.2 Gm. (1½ to 3 grains) three times daily. It is administered orally, hypodermically, or by application to the mucous membranes of the nose or the eye.

Manufactured by Frederick Stearns & Company, Detroit. U. S. patent 1,680,055 (Aug. 7, 1928; expires 1945). U. S. trademark 90,142.

Synephrin Tartrate Solution, 3%: Synephrin tartrate 3 per cent, sodium benzoate 0.2 per cent, and sodium chloride 0.8 per cent in distilled water.

Synephrin Tartrate Solution, 5 %: Synephrin tartrate 5 per cent, sodium benzoate 0.2 per cent, and sodium chloride 0.8 per cent in distilled water.

Synephrin Tartrate Emulsion Plain: Synephrin tartrate 2.5 per cent, sodium benzoate 0.4 per cent, in an emulsion of oil of sesame and acacia with distilled water.

Synephrin Tartrate Emulsion Compound: Synephrin tartrate 2.5 per cent, sodium benzoate 0.4 per cent, camphor 0.07 per cent, menthol 0.052 per cent, and oil of red thyme 0.17 per cent in an emulsion of oil of sesame, and acacia with distilled water.

Synephrin tartrate occurs as fine, white, odorless crystals. It is readily soluble in cold water and cold alcohol. The aqueous solution is neutral to litmus. It rotates the plane of polarized light to the right. It melts between 182 and 185 C., with decomposition (the rate of heating must be strictly according to the U. S. P. X).

Dissolve 0.10 Gm. of synephrin tartrate in 1.0 cc. of water; add 5 drops of ammonia water and rub the walls of the test tube until crystals separate. Filter by suction, wash with 5 cc. of cold water, and suck as dry as possible. Dry on a porous plate; when dry, determine the melting point: the free base obtained as just described melts at 183-185 C., with decomposition. (The temperature of the bath must be raised at the rate of 5-6 degrees per minute.)

Dissolve 0.05 Gm. of synephrin tartrate in a test tube in 2 cc. of water; add 15 drops of silver nitrate T. S., followed by 1 drop of ammonium hydroxide T. S., and place in a water bath previously heated to 70 C.: after a few minutes a silver mirror forms on the inside wall of the test tube. Dissolve 0.05 Gm. of synephrin tartrate in 2 cc. of water; add 2 drops of glacial acetic acid, 1 drop of ferrous

sulphate solution T. S. (freshly prepared), and 3 drops of hydrogen peroxide T. S., followed by an excess of sodium hydroxide solution T. S.: a deep amethyst color forms.

Dissolve 0.05 Gm. of synephrin tartrate in 3 cc. of water; add 2 drops of silver nitrate T. S.: no precipitate appears (*absence of chlorides*).

Transfer about 0.2 Gm. of synephrin tartrate, accurately weighed, to a 500 cc. Kjeldahl flask and determine the nitrogen content according to the method described in Laboratory Methods of the U. S. Army, Charles L. Craig, 1929, p. 38: the percentage of nitrogen corresponds to not less than 5.7 nor more than 5.9 per cent.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

NEUTROGEN ST. PELLEGRINO ANTACID LOZENGES NOT ACCEPTABLE FOR N. N. R.

Neutrogen St. Pellegrino Antacid Lozenges are stated to be "normalizing agents for the gastric functions" and to be the product of "Societa Anonima delle Terme di San Pellegrino, Milan, Italy." The following statement of composition appears on the box containing the lozenges: "'Neutrogen' S. P. Salts Extracted From The San Pellegrino Waters 0,250 Alluminium Silic. 0,250—Sugar Excipient Q.S." According to a circular received from the distributor, M. Wittmann, the solid components of the San Pellegrino mineral water consist largely of calcium sulphate with smaller amounts of magnesium and sodium combined with chloride and carbonate or bicarbonate. It would thus appear that the lozenges are claimed to consist of aluminum silicate (kaolin?) and a mixture of inorganic salts, chiefly calcium sulphate, with a relatively small amount of a carbonate or bicarbonate.

On the label of the box, the lozenges are stated to be "for excessive acidity, gastric disturbances, dyspepsia, gastric ulcers, etc." The trade package circular contains the following recommendations for the use of the lozenges: "1.—In acidity of the stomach (no matter what the cause may be). 2.—In states which may lead to gastric abrasions or ulcers and during the course of the latter. 3.—In subacute and chronic gastric catarrh. 4.—For gastric fermentation and putrefaction. 5.—For attacks of gastric cramp. 6.—In uricemic conditions and neuro-arthritic manifestations with gastric disturbances. 7.—For heavy drinkers and great smokers, for people who eat too much meat, those who are used to highly spiced cooking, and who do not know how, or cannot attenuate their habits, owing to climatic conditions, etc." The following explanation of how the lozenges exert these actions is given: "Neutralizing: because the alkaline substances are contained in very modest proportions, and such as to not cause the well known manifestations which are complained about, and due entirely to alkaline excess. Protective: on account of the bland, but efficacious action which is essentially mechanical, has been attributed to pure kaolin from olden times onwards, since the latter forms a protective film with the gastric secretions, while the gastric walls when gently stimulated, liberates its contents of food stuff and secretion and sends them on to the intestines. Normalizing: since the chief object of these lozenges is to nourish the elements whose functions are bad. Oligometallic: because the active elements are in very small quantities. Equilibrating: because the elements having an admitted biological value are contained in their proper proportions, and do not suppress each other but cooperate together. They are fractioned: because as they are prepared with small doses, they allow treatment to be followed up and controlled, and data to be gathered which will serve to increase the number of lozenges and keep the attending physicians posted, who will be able to get a better idea of the extent of the disturbances." This statement is essentially meaningless, except that it is evident that the effects are largely ascribed to the protecting action of the aluminum silicate (kaolin?). No evidence is offered to show that the long continued administration of aluminum silicate is rational or effective in the many conditions for which the lozenges are recommended, nor is evidence offered for the effectiveness of the mixture as a whole. The terms "Neutrogen" and "Antacid" used in connection with the lozenges is misleading in that the neutralizing power of the lozenges is small.

The product Neutrogen St. Pellegrino Antacid Lozenges is unacceptable for New and Nonofficial Remedies because no evidence has been presented to show that its use is rational in the conditions for which it is advertised, because the therapeutic claims are unwarranted, and because it is marketed under a misleading name and with claims that are likely to lead to its ill advised use by the laity.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

VITABAR

A Dextrose Sweetened Milk-Chocolate Coated Confection of Mixed Fruits with Wheat Embryo and Added Vitamin Extracts; Contains Vitamins A, B (Complex), C, D and E in Substantial Amounts

Manufacturer.—The Vitamin Company of America, Inc., Orlando, Fla.

Description.—A dextrose sweetened milk-chocolate coated confection in bar form; the "center" contains ground sugared grapefruit peel and pineapple, ground dates and dried apricots, wheat embryo and vitamin concentrates of cod liver oil and orange or grapefruit. Vitamins A, B (complex), C, D and E are present in substantial quantities.

Manufacture.—The manufacture involves essentially three distinct operations: (1) preparation of the fruit mass, (2) preparation of the vitamin concentrates, (3) preparation of the fruit bars.

Grapefruit peel, pineapples, dates, and dried apricots are the fruit materials used.

1. Preparation of fruit material:

Fresh grapefruit peel and salted water are allowed to stand in vats for a definite period; the salt solution is separated by centrifugation. The treated peel is cooked in boiling water and the water is removed; the operation is repeated four times. The entire treatment up to this point removes the bitterness from the peel. The treated peel is centrifugated to separate it from free water, and is placed with sucrose syrup in glass lined vacuum pans. The mixture is boiled under reduced pressure of 5 inches of mercury for eight hours. The cooked peel is clear of color and permeated with sugar. Additional sucrose is added and the evaporation continued until the sugars crystallize out. The "crystallized" peel is removed and ground.

The "crystallization" of the pineapples is substantially the same as that described for the grapefruit peel, excepting it is not necessary to remove any bitter oils and other substances prior to "crystallization." The dates and apricots are processed in an autoclave under 10 pounds steam pressure.

2. Preparation of vitamin concentrates:

Vitamins A and D concentrates are prepared from vitamin tested Norwegian cod liver oil. The cod liver oil and a solution of acetic acid are agitated in a glass lined tank exhausted of air. The oil and acid solution are separated by centrifugal means and the oil is discarded. The acid oil emulsion is saponified with an alcohol solution of sodium hydroxide. The resulting soap is dried under reduced pressure, broken into small pieces and extracted with purified petroleum benzin. The benzin solution is evaporated under reduced pressure. When nearly all the benzin is removed, ground wheat embryo is mixed in. The embyro becomes impregnated with the unsaponifiable material. The drying procedure is continued and the dried mixture ground. The resulting material is biologically tested with rats for its vitamin A and D units content.

The vitamin C concentrate is prepared from tree ripened grapefruit and oranges. The washed fruit is halved and reamed. The coarse pulp and seeds are removed; the remaining material is centrifugated. The oil, wax and pulp free juice is evaporated under reduced pressure (2 inches of mercury) to a heavy syrup, which is treated with a mixture of ethyl alcohol and acetone

to precipitate the vitamin containing materials. The precepitate is separated out and thoroughly mixed with wheat embryo; the mixture is dried under reduced pressure and ground. The vitamin C units content of the final material is biologically determined with guinea-pigs.

Ground wheat embryo supplies vitamins B, G and E.

3. Preparation of fruit bars:

The prepared fruit materials in definite proportions are thoroughly mixed; estimated quantities of the vitamin concentrates are added and the mixing is continued. The mixed fruit and vitamin concentrates are conveyed to a macaroni press and forced through a die. The ejected material is cut into pieces of desired lengths, which are coated with dextrose sweetened milk chocolate. The finished bars are biologically tested with rats and guinea-pigs for the vitamin content.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	15.9
Ash	1.1
Fat (ether extract)	5.9
Protein (N × 6.25)	3.2
Reducing sugars before inversion as invert	55.8
Sucrose (copper reduction method)	0.0
Crude fiber	3.5
Carbohydrates other than crude fiber (by difference)	69.3
Titratable acidity, as citric acid	1.07

Calories.—3.48 per gram; 98.8 per ounce.

Vitamins.—Biologic vitamin tests show one fresh Vitabar to have the following vitamins content:

Vitamin A, 80 units. (One unit is the maximum quantity required daily to give an average gain in weight of 3 Gm. a week for eight weeks after the depletion period.)

Vitamin B (complex) approximates that of moist yeast.

Vitamin C approximates that of 50 cc. of fresh orange juice.

Vitamin D, 100 units, or approximately that of one-half of a teaspoonful of standard cod liver oil.

Vitamin E approximates that of one-half pound of whole wheat.

Claims of Manufacturer.—A confection for providing vitamins A, B (complex), C, D and E in substantial quantities.

PABST PASTEURIZED PROCESS CHEESE (AMERICAN)

Manufacturer.—Pabst Corporation, Milwaukee.

Description.—A process American cheese containing disodium and trisodium phosphates as emulsifiers and salt.

Manufacture.—The manufacture is essentially the same as that for Pabst-ett (A Pleasing Combination of "Process" Cheese, Milk Proteins, Milk Sugar, Milk Minerals) (THE JOURNAL, Oct. 24, 1931, p. 1227) excepting that no milk or concentrated milk whey is added.

Chemical Composition (submitted by manufacturer).—

	(sample as is) per cent	(moisture free basis) per cent
Moisture	39.8	...
Ash	5.0	8.3
Salt in ash	1.4	2.3
Fat (ether extract)	30.8	51.1
Protein (N × 6.38)	22.9	38.1
Lactose (by difference)	1.5	2.5
Phosphorus (P)	0.35	0.58

Calories.—3.75 per gram; 106.5 per ounce.

Vitamins.—The vitamin content is essentially that of Pabst-ett (A Pleasing Combination of "Process" Cheese, Milk Proteins, Milk Sugar, Milk Minerals).

Claims of Manufacturer.—See this section for "Pabst-ett."

ZIM'S KEW BEE BREAD

Manufacturer.—Zimmerman's Bakeries, Incorporated, Hannibal and Mexico, Mo.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, 75 per cent patent flour of Southwest wheat, water, yeast, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough is fermented for from four to five hours, after which are added flour, water, salt, dextrose, lard, sweetened condensed skim milk and yeast, to make the completed dough, which is cut into pieces of desired weight, fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms for the materials used are kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	37.3
Ash	0.7
Fat (direct ether extraction method)	0.6
Protein (N × 6.25)	7.8
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	53.5

Calories.—2.51 per gram; 71.3 per ounce.

Claims of Manufacturer.—A bread of good quality.

MEAD'S CEREAL

Enriched with Mineral and Vitamin Containing Foods

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—A cereal mixture of wheat meal (farina), oatmeal, wheat embryo and yellow cornmeal; with powdered bone, dehydrated alfalfa leaf and brewers' yeast.

Manufacture.—Wheat meal (farina), oatmeal, wheat embryo and yellow corn meal, and powdered bone, alfalfa and brewers' yeast, given in the order of decreasing proportions, are mixed, heated to 71 C. for a few minutes, and packed in paper cartons.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	3.2
Fat (ether extract)	3.0
Protein (N × 6.25)	15.0
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	71.7
(proximate analysis of ash)	
Calcium (Ca)	0.78
Phosphorus (P)	0.62
Iron (Fe)	0.024
Copper (Cu)	0.0013
Magnesium (Mg.)	0.13
Sodium (Na)	0.46
Potassium (K)	0.40
Chlorine (Cl)	0.68
Sulphur (S)	0.015
Silica (Si)	0.015

Calories.—3.74 per gram; 106.2 per ounce.

Vitamins.—Substantial amounts of vitamins A, B, E and G are present.

Claims of Manufacturer.—A good quality cereal enriched with vitamin and mineral containing foods. One ounce contains as much calcium as 6 ounces of milk and more iron than two egg yolks; 1½ ounces more phosphorus than one egg yolk, and more copper than three times as much rolled oats or four times as much farina.

KING WHEAT FLOUR

Manufacturer.—Associate companies of General Mills, Inc., Minneapolis.

Description.—A hard winter wheat patent flour designed for bakers' use; packed in sacks.

Manufacture.—The manufacture is essentially the same as that for Gold Medal Flour "Kitchen-Tested" (THE JOURNAL, Oct. 3, 1931, p. 1002) excepting that selected hard winter wheat is used. The milled flour is bleached and treated to improve the color and baking quality as described for Gold Medal Flour "Kitchen-Tested," although unbleached flour is furnished on request.

The flour is tested by the company's laboratory and experimental bake shop. The laboratory tests aid in controlling the mill operations; the experimental bake shop tests are to assure uniform baking results in commercial baking.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	13.0 –14.5
Ash	0.42– 0.46
Fat (direct ether extraction method)	0.8 – 1.2
Protein (N × 5.7)	10.8 –11.8
Crude fiber	0.4 – 0.5
Carbohydrates other than crude fiber (by difference)	74.6 –71.5

Calories.—3.49–3.44 per gram; 99.1–97.7 per ounce.

Claims of Manufacturer.—A good quality hard winter wheat patent flour designed to meet the requirements of the baking industry for an economical bread flour.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 21, 1931

HUMAN MILK STUDIES

There is probably no other single food that has been submitted to as many chemical analyses as has cow's milk. There are published records of literally thousands of such examinations of samples from a corresponding large number of the lactating animals. From such data it has become clear that market milk, though representing the normal secretion of a physiologically functioning gland, varies widely in its composition. The variations are probably distinctly greater than those of the bloods from which in ultimate analysis the milk is derived.

In view of these facts it should not be surprising that human milk, derived as it is from a species far less "standardized" in respect to both "breed" and "feed," has been found to vary in composition between wide limits.[1] A recent writer [2] reminds us that among the conditions demonstrably effective in altering the quantity and quality of the milk secreted are the size and anatomic structure of the mammary gland, the amount and kind of food ingested, the environmental conditions, such as fresh air, sunshine and the amount and intensity of work, rest and exercise, the emotional and psychic make-up of the person, and also extraneous disturbances. But this is not all. Not only do the constituents of breast milk change during the progression of the period of lactation so that they may change in concentration from day to day, but they may also vary at different times of the day and night and during a single nursing period. Working with standardized methods of collection and analysis, Macy and her co-workers [2] at the Research Laboratories of the Children's Fund of Michigan in Detroit have observed gross chemical changes in breast milk representative of the first and last halves of nursing. These changes, we are told, were not influenced by the presence and condition of the baby at the breast. They are indicative of nutritional and clinical significance. During the progression of nursing, the fat, protein, casein-nitrogen, total solids and phosphorus tend to increase.

Such facts may not be without practical significance. Macy says that if the milk tends to become more concentrated as nursing proceeds, as has been observed clinically and reported in the literature, the strong, large infant would perhaps obtain not only a greater amount but also a more concentrated grade of milk, and, on the other hand, the underweight, weak baby might be less fortunate and obtain a milk inferior in both quantity and quality. There have been instances, we are informed, of improved growth and development of some weak and undernourished babies when they are allowed to secure the last portion of the milk in the mammary gland, the first portion having been removed by manual expression or by breast pump. The Detroit analyses disclosed individual differences in the nitrogen partition of breast milk. This permits the conjecture that, in the words of the analysts, the nature of the first and last portions of milk expressed from the glands may vary among women, owing perhaps to differing types of structure of the mammary glands and other factors incorporated in the mechanism of the secretion itself, and also to extraneous influences. All such variations may have a nutritional as well as a clinical significance. A student of nutrition [3] has remarked that the milk from an ignorant but healthy mother is more likely to meet all the essential qualifications than an artificial formula prescribed by a physician and prepared in a high class home or milk laboratory. These investigations bring the reminder that perhaps the renewed study of the chemistry of breast milk will not be without further rewards in its application to the feeding of the young.

ENZYME THERAPY

The recently reported discovery by Avery and Dubos [4] of the Rockefeller Institute of a highly specialized bacterial enzyme capable of decapsulating type 3 pneumococci both in vitro and in the animal body, and of protecting mice against a thousand lethal doses of type 3 infection, has led to renewed hope that in time bacterial enzymes may be successfully used in clinical therapy. The profession, however, must guard against premature optimism and premature exploitation of such enzymes. Many enzymes are known to be extremely toxic for laboratory animals, intravenous injection of urease, for example, leading to death in from two to three minutes with symptoms resembling those of cyanide poisoning. Clinical trial must be preceded by evidence of nontoxicity or the development of methods that will inhibit or neutralize such toxicity without destroying possible therapeutic value.

1. Talbot, F. B.: A Summary of Present Knowledge of Human Milk, Am. J. Dis. Child. **7**: 445 (June) 1914. Gardner, J. Addyman; and Fox, F. W.: On the Variations in the Composition of Normal Human Milk, Practitioner **114**: 153 (Feb.) 1925. Myers, B.: An Investigation on the Analysis of Human Milk, Brit. J. Child. Dis. **24**: 249 (Oct.-Dec.) 1927. Bell, M.: Studies on the Composition of Human Milk, J. Biol. Chem. **80**: 239 (Nov.) 1928.

2. Macy, Icie G.; Nims, Betty; Brown, Minerva; and Hunscher, Helen A.: Human Milk Studies: VII. Chemical Analysis of Milk Representative of the Entire First and Last Halves of the Nursing Period, Am. J. Dis. Child. **42**: 569 (Sept.) 1931.

3. McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 2, Philadelphia, W. B. Saunders Company, 1931, p. 275.

4. Avery, O. T., and Dubos, R.: J. Exper. Med. **54**: 73 (July) 1931.

The clinical use of bacterial enzymes was suggested about thirty years ago by Emmerich and his co-workers,[5] who found that filtrates from broth culture of Bacillus pyocyaneus are capable of digesting staphylococci and diphtheria bacilli in vitro and exert a favorable influence on experimental anthrax infection in laboratory animals. They believed that this protective action was due to a nuclease lysing the injected anthrax bacilli. Twenty years later a somewhat similar observation was made by Toenniessen,[6] who found that the enzymes formed by B. vulgatus are capable of decapsulating Friedländer's pneumobacillus in vitro, presumably through hydrolysis of its capsular polysaccharides.

The discovery that capsules of type pneumococci contain highly specialized polysaccharides resistant to normal animal and plant enzymes led to the hope that microbic enzymes capable of hydrolysing these capsular sugars might be of therapeutic value. Hundreds of yeasts, molds and soil bacteria known to decompose cellulose were tested for such enzymes before the Rockefeller Institute scientists found one soil sample, from a cranberry bog of New Jersey, capable of utilizing type 3 pneumococcus polysaccharide.[7] From this sample a pure culture of the antipneumococcus bacillus was isolated and exalted in its antipneumococcic function by appropriate starvation methods. The bacillus thus isolated is highly specific in its use of carbohydrates, using only the type 3 pneumococcus polysaccharide and having no demonstrable effect on the specific polysaccharides of other pneumococci or on the capsules of other pathogenic micro-organisms. The intracellular enzyme extracted from this culture is capable of decapsulating type 3 pneumococci both in vitro and in the animal body and has a distinct anti-type 3 therapeutic effect in experimental animals. Further experimentation may indicate its practical utility.

5. Emmerich, R.; Low, O., and Korschun, A.: Centralbl. f. Bakt. **31**: 1, 1902.
6. Toenniessen, E.: Centralbl. f. Bakt. **85**: 225, 1921.
7. Dubos, R., and Avery, O. T.: J. Exper. Med. **54**: 51 (July) 1931.

THEELIN—AND THE TECHNIC OF INTRODUCTION OF NEW DRUGS

Any new medical discovery—particularly one that has promise of merit as a therapeutic agent—arouses general interest. An investigator who is commercially disinterested is promptly embarrassed by promotional schemes to capitalize his discovery. How, he inquires, may the remedy be introduced in a manner that will inspire confidence in the therapeutic agent, protect the scientific interests of the research worker, and possibly repay in some part the expenses of the investigation, or aid future research in the institution in which the discovery was made? For many years the Council on Pharmacy and Chemistry has fostered certain broad principles governing the introduction of drugs. The fundamental considerations were summarized in a paper [1] read at the annual session of the Association in Portland in 1929:

1. The composition must be known, including adequate evidence of constitution and molecular structure, together with methods of assay.

2. The action of the drug on experimental animals should be studied by competent investigators.

3. The crucial test of a drug is carefully controlled clinical experimentation. Evidence obtained under proper conditions therefore should be available. Often after a drug has shown promise of considerable merit it has been introduced through wrong channels or by misdirected publicity.

The research worker who wishes to remain free from commercial entanglements has many obstacles confronting him. Acceptable methods of handling isolated instances have been devised previously by such groups as the Insulin Committee, the Committee on Pernicious Anemia of the Harvard Medical School, and the Scarlet Fever Committee, Inc. A recent example is the isolation by Doisy [2] of the female sex hormone in crystalline form. Research on the follicular hormone on the part of Doisy and Allen and the final isolation of this hormone by Doisy and his associates as reported at the thirteenth International Congress of Physiology in August, 1929, were associated with wide publicity. Numerous hurriedly developed preparations of doubtful value and nostrums absolutely without value were promoted as having a potency in terms of Allen-Doisy rat units. The isolation of the hormone had been heralded in the advertisements as the discovery of a "sex remedy" and the chemical achievement had been announced by the manufacturers of many quack products as a proof of the fact that "vitality" and "sex vigor" can be controlled by their special brands of "medicine." [3]

In order to safeguard the scientific integrity and academic interests of the Doisy discovery, the St. Louis University School of Medicine devised a plan on the basis of precedent which may serve as a guide to others. The university has now published in bulletin form all essential details of the plan, which will probably be referred to by other workers confronted with somewhat the same problems. Each case may require certain deviations in minor details to fit the special purpose. In essence, the plan devised is as follows: The discoverer, Dr. E. A. Doisy, and his associates assigned any patent rights—process or product—to their school. A committee of three, one of whom was the discoverer, was formed by the university to administer the transactions. This committee adopted a constitution and by-laws. It was agreed: (1) that the product will be known under the name of theelin, which designation is recognized "by the Council on Pharmacy and Chemistry as the nonproprietary N. N. R. name for the crystalline ovarian hormone made by the process of Doisy"; (2) that one pharmaceutic firm will be licensed to make

1. Puckner, W. A., and Leech, P. N.: The Introduction of New Drugs, J. A. M. A. **93**: 1627 (Nov. 23) 1929.
2. Isolation of the Crystalline Female Sex Hormone, editorial, J. A. M. A. **94**: 341 (Feb. 1) 1930.
3. Schwitalla, A. M.: The Ovarian Hormone Isolated by Doisy, J. A. M. A. **94**: 1523 (May 10) 1930.

the product exclusively for a limited period, and thereafter a nonexclusive license will permit a limited number of other firms to manufacture it—all under the nonproprietary designation of theelin; (3) that the manufacturers will submit their products to the Council on Pharmacy and Chemistry; (4) that such royalties as may accrue will be returned to the university; these funds, the committee agreed, will be for university research and for testing laboratories—none to accrue to the personal benefit of any individual; (5) that the firm will submit to the committee for approval all advertising matter which it intends to publish.

While the contract between the university and the manufacturer is given in abstract form, omitting financial details, it will be a serviceable guide to others interested. Irrespective of whether or not theelin is found valuable for medical practice, Dr. Doisy and St. Louis University are to be congratulated on taking such precautionary steps, thus placing the introduction and control of the remedy on a high plane.

Current Comment

PHYSICIANS IN THE PHILIPPINES

The estimated population of the Philippines in 1928 was 12,604,100. There are about 1,911 doctors, so that there are approximately 6,596 persons for every physician. In the United States there is one doctor for every 800 people; in England and Wales, one for every 1,490; in Germany, one for every 1,560, and in France one for every 1,690. The Philippines cannot, therefore, be said to be oversupplied with medical men. It has been argued that the number of physicians available in the United States is too great and that we are here confronted with a problem of distribution rather than supply. There has been a speedily increasing proportion of physicians to population in the Philippines; whereas in 1905 there was one physician for every 21,209 people or one to every 430 square miles of territory, there is one now to approximately every 6,596 people or one to every 59 square miles of territory. Furthermore, the two medical colleges in the Philippines are educating students who will be gradually added to the available physicians. The Santo Tomas College at Manila has 896 students in attendance. Incidentally, there are 72 women physicians among the 1,911, or approximately 3.7 per cent. Dr. A. S. Fernando,[1] secretary-treasurer of the Philippine Islands Medical Association, reports that the percentage of women physicians is increasing. A questionnaire circulated in the preparation for a Philippine medical directory elicited 799 replies and indicated that 97.4 per cent of the physicians are in active practice. Moreover, 143 letters were returned, owing to the fact that the addresses of the physicians were indefinite or unknown. Apparently somewhat primitive conditions are responsible for this failure to respond. As in the United States, there is uneven distribution of physicians in the Philippine Islands, Manila having a fairly adequate supply whereas many of the provinces suffer from a scarcity. The average age of the physicians is 38. The average age at graduation is 26 years. The specialists seem inclined toward internal medicine, obstetrics, pediatrics and surgery. Dr. Fernando has rendered a valuable service in making this material available. It reveals the medical economic problems of a community far removed from our own and yet related. It indicates, moreover, the necessity for accurate information in the evaluation of medical economic questions.

1. Fernando, A. S.: Physicians in the Philippines, J. Philippine Islands M. A. **11**: 319 (Aug.) 1931.

OWNERSHIP OF ROENTGENOGRAMS

The question whether the roentgenograms of a hospital patient belong to the patient or to the hospital was answered by a court for the first time, so far as is known, in *Hurley Hospital* v. *Gage*, decided on appeal, April 21, by the circuit court for the county of Genesee, Mich. The patient had been roentgenographed in the roentgenographic department of the Hurley Hospital at Flint. The usual charge for the service was included in the patient's bill. He made a payment on account but refused to pay the charge for roentgenographic service unless the roentgenograms were delivered to him. The hospital refused to deliver them and sued the patient for the balance due. In the justice's court where the suit was instituted, judgment was given against the hospital. The hospital, however, because of the principle involved, appealed to the circuit court of Genesee County. At the hearing on the appeal, no one appeared on behalf of the patient and the case was heard and judgment rendered without the submission of evidence or argument by him. In giving judgment, the court pointed out that the hospital sold and patients paid for, not the material that went into roentgenograms, but knowledge and experience. The protection of the hospital might depend largely on the proper preservation of the roentgenograms and, said the court, the films should remain with the hospital. Judgment was given against the patient for the balance due on his bill, covering the amount charged by the hospital for the roentgenograms.

WASSERMANN REACTION IN COLLEGE STUDENTS

For several years, routine Wassermann tests have been made at the University of Minnesota as a part of the periodic health examination of students in the upper classes. The tests are made by the laboratory of the state board of health, and those which are positive are repeated several times. In a two year period, 5,000 such tests were performed on students, and ten were consistently positive. Of these ten students only one knew that he had syphilis and two others suspected that they might have a venereal disease. Assuming that several positive tests on a student indicate that he has been infected with syphilis, this work shows for the group the low incidence of syphilis of 0.2 per cent. Socially and economically these students came from practically every group in the community. Nevertheless, the group is select with respect to age, intellectual

capacity and ambition, and probably is not, therefore, representative of the general population of the country. Estimates of the incidence of syphilis, ranging from 2 to 15 per cent, in the general population, have been made by different investigators. Usually, however, they have ranged from 5 to 10 per cent. These percentages, of course, have been derived from a study of a small part of the population and cannot be accurate for the whole population. They all show, however, that in any large group of people, regardless of the stations in life from which they come, there are a considerable number who have positive Wassermann tests and who probably have syphilis.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 11:15 a. m. on Saturday over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

November 28. Smallpox and Chickenpox.

Five Minute Health Talks may be heard over Station WBBM of the Columbia Broadcasting System from 2:25 to 2:30 p. m. on Monday, Wednesday and Friday.

The program for the week is as follows:

November 23. The Sore Throat Signal.
November 25. Impetigo.
November 27. Common Sense Care.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Recent Changes at University of Alabama.—The following changes at the University of Alabama School of Medicine were recently announced:

APPOINTMENTS

Allen D. Keller, Ph.D., professor of physiology and pharmacology, from the Yale University School of Medicine.
Dr. Franklin S. DuBois, assistant professor of anatomy and acting executive of the department, from the University of Chicago.
Dr. Gene H. Kistler, assistant professor of physiology and pharmacology and assistant in medicine, from the University of Chicago.
Marie C. D'Amour, instructor in physiology and pharmacology, from the University of Chicago.

PROMOTIONS

Dr. Ralph McBurney, professor of bacteriology and hygiene and assistant in medicine.
Dr. Allan W. Blair, assistant professor of pathology and bacteriology and instructor in surgery.
Eleanor A. Hunt, assistant professor of microscopic anatomy.
Dr. Luney V. Ragsdale, assistant clinical professor of medicine.
Dr. John McLaughlin Forney, assistant clinical professor of obstetrics.

ARKANSAS

Society News.—The Tenth Councilor District Medical Society was addressed in Fort Smith, September 15, among others, by Drs. Darmon A. Rhinehart, Little Rock, "Present-Day Status of Medical Practice"; Sidney J. Wolfermann, Fort Smith, "Present-Day Status of the Peptic Ulcer Question," and Herbert Moulton, "Indications for Surgical Intervention in Glaucoma."——Major James M. Troutt was the guest speaker at the clinical conference held, October 1, under the auspices of the staffs of the Leo N. Levi Memorial Hospital, Hot Springs National Park, and the Charles Steinberg Clinic; his subject was "Liver Function in Its Relation to Disease."

COLORADO

Society News.—Dr. Frederick M. Heller, Pueblo, addressed a recent meeting of the Crowley County Medical Society on "Classification, Cause and Treatment of Rheumatism."——The Larimer County Medical Society was addressed, October 7, by Drs. Foye R. Troute and Harvey W. Snyder, Denver, on "Nonsurgical Tuberculosis" and "Surgical Phases of Tuberculosis," respectively.——Dr. Thaddeus P. Sears, Denver, addressed the Mesa County Medical Society recently on "The Mechanism of Edema."——The Northwestern Colorado Medical Society was addressed at Steamboat Springs, October 16, by Dr. Harold R. McKeen, Denver, on "The Acute Abdomen" and by Dr. Chester A. Conyers, Denver, "Physiotherapy, with Special Reference to Diathermy."——Among others, Drs. Sanford M. Withers, Denver, and Harold T. Low, Pueblo, addressed the Prowers County Medical Society in Lamar, October 6, on "Cancer and Cancer Clinics" and "Treatment of Bladder Neck Obstruction," respectively.——At the seventh annual meeting of the Colorado Hospital Association, Colorado Springs, November 10-11, the program included papers by Drs. Alfred H. Washburn, Denver, on "What Place Has Research in the Hospital?" and Dr. Herman Schwatt, Spivak, "The Community's Problem of Non-Resident, Indigent Patients Being Released from Our National Sanatoria."——The Medical Society of the City and County of Denver was addressed, November 3, by Drs. Josiah N. Hall and Casper F. Hegner on "Reminiscences of Past Presidents of the Colorado State Medical Society" and "History of Surgery of the Thyroid," respectively.——Dr. Clough T. Burnett, Denver, addressed the Boulder County Medical Society, November 12, on "Rheumatic Heart Disease."

DISTRICT OF COLUMBIA

Faculty Reorganization at George Washington University.—According to Dr. Earl B. McKinley, dean, the George Washington University School of Medicine recently organized a faculty, in contradistinction to the teaching staff, composed of the heads of the various departments in the medical school. The new faculty consists of the executive officers of the following departments:

Anatomy, Prof. George B. Jenkins.
Bacteriology, Prof. Earl B. McKinley.
Pathology, Prof. Oscar B. Hunter.
Biochemistry, Prof. Joseph H. Roe, Ph.D.
Pharmacology, Prof. George B. Roth.
Medicine, Prof. Walter A. Bloedorn.
Dermatology and syphilology, Prof. Charles A. Simpson.
Pediatrics, Prof. Harry H. Donnally.
Radiology, Prof. Arthur C. Christie.
Psychiatry, Prof. William Alanson White.
Neurology, Prof. Walter Freeman.
Surgery, Prof. Charles S. White.
Otorhinolaryngology, Prof. William B. Mason.
Ophthalmology, Prof. William T. Davis.
Urology, Prof. Francis R. Hagner.

The executive officers for the departments of physiology, obstetrics and gynecology, and hygiene and preventive medicine are to be announced later. The new faculty will formulate the future policies of the institution and develop plans for the new George Washington University Medical Center.

GEORGIA

Memorial to Dr. Eve Dedicated.—At a dedication ceremony in Augusta, November 14, a monument was unveiled by Tytus Filipowicz, Polish ambassador to the United States, in memory of Dr. Paul Fitzsimmons Eve to mark the one hundredth anniversary of his services to Poland. Two bronze tablets to be placed on the monument were given by the Polish-American Medical and Dental Association and the University of Georgia Medical Department. Presentation of the tablets was made by Drs. Walter Peters, Cleveland, chairman of the Eve committee of the association, and William L. Moss, dean of the medical department. Dr. Duncan Eve, Nashville, a grandson of Dr. Paul F. Eve, gave an address in behalf of the Eve family. The city council of Augusta recently adopted a resolution which provided for naming the 600 block of Greene Street "Eve Square" in honor of Dr. Eve; it is in this square that many members of the family lived during the past century. Dr. Eve was born near Augusta in 1806; he received his medical degree from the University of Pennsylvania School of Medicine in 1828. At the time of the Polish insurrection in November, 1830, Dr. Eve was studying in Paris. He organized a Polish-American committee in France to aid the Poles in their struggle for freedom and, in 1831, joined the insurgent army's medical service. He received Poland's highest military decoration and remained with the army until the end of the revolution. Dr. Eve was professor of surgery in Georgia Medical College from 1832 to 1850, when he went to the University of Louisville. Later he was professor of surgery at the

University of Nashville and at the Missouri Medical College. In 1857 he was President of the American Medical Association. He died in 1877.

IOWA

Society News. — At the seventy-fifth anniversary meeting of the Scott County Medical Society, October 6, Dr. Walter L. Bierring, Des Moines, talked on the history of the society, and Dr. Frank J. Rohner, Iowa City, on diagnosis.——Dr. George de Tarnowsky, Chicago, among others, addressed the dinner meeting of the Iowa and Illinois Central District Medical Association, Moline, Ill., October 8, on "Treatment of Low Back Pain."——The Marshall County Medical Society was addressed, October 6, by Drs. John F. Herrick and Friedrich A. Hecker, Ottumwa, on "Disorders of the Liver and Gallbladder."——Dr. Walter L. Bierring addressed the Des Moines Academy of Medicine, October 27, on "Clinical Significance of Electrocardiography."——The Hardin County Medical Society was addressed, September 29, on "The Patient—Gonorrhea—Sterility," by Dr. Henry E. Kleinberg, Des Moines.——Drs. Edward J. Harnagel and Lester D. Powell, Des Moines, addressed the Austin-Flint-Cedar Valley Medical Society in Algona, October 6, on "Traumatic Appendicitis" and "A Consideration of Gallbladder Disease," respectively.——Drs. John H. Peck and Christian B. Luginbuhl, both of Des Moines, conducted a lung and heart clinic, respectively, before the Bremer County Medical Society, October 2.——A recent meeting of the Black Hawk County Medical Society was addressed, among others, by Mr. George N. Lyman of the law enforcement division of the state department of health, Des Moines, on "Enforcement of the Medical Practice Act."——Drs. Fred M. Smith and Erwin Von Graff, Iowa City, addressed the Woodbury County Medical Society, October 14, on "Valvular Diseases of the Heart" and "Phases of Minor Surgery," respectively.——Dr. Chetwynd M. Franchere, Mason City, among others, addressed the Cerro Gordo County Medical Society, October 27, on "Infant Edema in Relation to Maternal Albuminuria"; Dr. Hale F. Shirley, Lincoln, Neb., among others, addressed the society, September 15, on "Allergical Hypothesis of Scarlet Fever."

KENTUCKY

Personal. — Dr. Howard M. Batson, Clayton, N. M., has been appointed health officer of Trigg County to succeed Dr. George M. Wells.——Dr. Martin H. Skaggs, Louisa, has resigned as health officer of Lawrence County to accept a similar position in Powell County.——Dr. Edward R. Daviess, Georgetown, head of the Scott County health department, has resigned to take a similar position in Kingwood, W. Va.

Society News.—Drs. James Farra Van Meter and Edward H. Ray, Lexington, addressed the Harlan County Medical Society, Harlan, October 24, on "Malignancy of the Face and Oral Cavity" and "Urological Diagnosis," respectively.——Dr. William L. Tyler addressed the Daviess County Medical Society, Owensboro, October 27, on "Clinical Significance of an Electrocardiogram."——Dr. John L. Jones, state epidemiologist, addressed the Grant County Medical Society, Williamstown, October 21, on scarlet fever.

Conference of Health Officers.—The annual conference for health officers conducted by the state board of health was held in two divisions this year in consequence of the prevalence of diphtheria throughout the state. Health officers of the eastern counties of the state met at Richmond, October 30-31, and those of the western counties at Madisonville, November 5-6. Control of diphtheria, malaria, pellagra, venereal disease and tuberculosis were among the subjects discussed. Among the speakers at both meetings were Drs. Arthur T. McCormack, Burrel C. Wilson, John L. Jones and Jethra Hancock of the state board of health, Louisville; Dr. George A. Wheeler, E. C. Stoy and H. A. Johnson, all of the U. S. Public Health Service.

LOUISIANA

Society News.—The Orleans Parish Medical Society was addressed, November 9, in New Orleans, by Drs. Jackson Thornwell Witherspoon on "Clinical and Social Aspects of Vulvovaginitis in Children, with the Outline of a Special Method of Treatment"; Isidore Cohn, "Disappointments in Cancer Surgery," and Frank L. Loria, "Clinical Experiences with Avertin."

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-two cities with a total population of 36 million, for the week ended November 7, indicate that the highest mortality rate (18.4) appears for New Orleans, and the rate for the group of cities as a whole, 10.7. The mortality rate for New Orleans for the corresponding period last year was 16.2, and for the group of cities, 11.7. The annual rate for eighty-two cities for the forty-five weeks of 1931 was 11.9, and the same rate appears for the corresponding weeks of 1930. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large Negro population, may tend to increase the death rate.

MARYLAND

Clinics at University of Maryland.—A series of clinics is being offered at the University of Maryland by the division of medical extension. Dr. Lewellys F. Barker conducted the first two medical clinics, November 12-19; he will also direct the medical clinic, December 3. Dr. John C. Gittings will hold clinics on tuberculosis and cardiovascular disease, December 10 and 17, respectively.

Undulant Fever in Washington County.—Eighteen cases of undulant fever have been reported in Washington County during the last year, according to a recent announcement. Dr. William Ross Cameron, health officer of the county, is making a study of the individual cases. Most of the patients are rural residents, farmers and their families who come in contact with dairy cattle afflicted with contagious abortion. Dr. Hermon E. Hasseltine of the U. S. Public Health Service was detailed to the county to investigate the reported eighteen cases. He addressed a joint meeting of the Washington County Medical Association and the Cumberland Valley Medical Association at Hagerstown, October 16, on undulant fever.

Society News.—The Society of Hygiene of Johns Hopkins University was addressed, October 21, by William W. Cort, Ph.D., on "Effect of Diet on Hookworm Infestation in Dogs"; James H. Shrader, Ph.D., "Possible Metallic Content of Milk as Affected by Pasteurizing Plant Conditions," and Anna M. Baetjer, Sc.D., and Claude H. McDonald on "Relation of the Sodium, Potassium and Calcium Ions in the Heart Rhythmicity."——At a meeting of the West Baltimore Medical Association, October 20, Drs. Lewellys F. Barker and Emil Novak, Baltimore, discussed their research work on disorders of the endocrine glands; state medicine was also discussed.——Dr. William H. Welch, Baltimore, addressed the first of an annual series of "field nights" to be held by the University Club, Baltimore, October 23, on European medical and scientific congresses and celebrations. Dr. Lewellys F. Barker is scheduled to address one of these meetings on his trip to Russia.——The Johns Hopkins Historical Club was addressed, October 26, by Dr. Henry E. Sigerist of the Leipzig Institute, on "The Institute for the History of Medicine at the University of Leipzig," and Dr. Dean Lewis, "History of the Surgical Clinic."——At the October 28 meeting of the Baltimore County Medical Association at Sykesville, Drs. George C. Medairy, Owings Mills, spoke on "Protection of the Institution against Certain of the Contagious Diseases"; Maud M. Rees, "Psychoses Associated with Infantilism," and Edwin P. Bledsoe, encephalitis lethargica.——A symposium on measles featured the meeting of the Baltimore City Medical Society, November 6. The society held a joint meeting with the District of Columbia Medical Society, November 20, when Dr. Thomas A. Groover, Washington, D. C., spoke on "Radiographic Visualization of the Liver and Spleen by Means of Intravenously Injected Thorium Dioxide"; Dr. William D. Tewksbury, "Acute Pulmonary Abscess Treated with Artificial Pneumothorax: Results in Thirty-Nine Cases," and Dr. Leroy W. Hyde, "Color Photography in Medicine."

MASSACHUSETTS

Monthly Discussions on Heart Disease.—The New England Heart Association announces the program for its series of monthly discussions on various aspects of cardiovascular disease. The speakers, November 4, were Sir Thomas Lewis, London, and Dr. James C. White; the subject was "Raynaud's Disease." The general topics for subsequent meetings are: December 2, "Congenital Cardiovascular Disease," Drs. Arthur C. Ernstene, Howard B. Sprague and Hyman Green; January 6, "Rheumatic Heart Disease," Drs. Thomas Duckett Jones, William B. Breed and William H. Robey; February 4, "Bacterial Endocarditis," Drs. Frederick T. Lord, Cadis Phipps and Hyman Morrison; March 2, "Effect on the Heart of Diphtheria, Scarlet Fever and Tuberculosis," Drs. Edwin H. Place and John B. Hawes 2d, among others; April 6, "Cardiovascular Syphilis," Dr. Tracy B. Mallory, among others not yet assigned; May 11, "Thyrocardiac Disease and Other Endocrine Cardiovascular Relationships," Drs. Lewis M. Hurxthal, James H.

Means and Fuller Albright, and June 1, "Nonvalvular Heart Disease (Chronic Myocarditis)," Drs. Shields Warren, Henry A. Christian and Henry Jackson.

MICHIGAN

Mayor Appoints Advisory Committee.—Mayor George Phoenix, Saginaw, recently appointed a committee of physicians to advise him on health matters. At the first meeting, October 12, Dr. Michael D. Ryan was elected chairman, and Dr. David E. Bagshaw, secretary. Other members include Drs. Arthur E. Leitch, William J. O'Reilly, William F. English, John T. Sample and John W. Hutchison.

Children's Fund Sponsors Health Contest.—Pupils in rural schools are eligible to compete in a health contest sponsored by the Children's Fund of Michigan for prizes totaling $1,000. The contest opened, November 15, and will extend to April 1, 1932. The progress made during the school year will be officially judged by a special committee selected by the fund, the awards to be made on the basis of actual progress made in overcoming the health handicaps present in the school.

Society News.—Dr. Harry Jackson, Chicago, addressed the Saginaw County Medical Society at Saginaw, November 17, on "Skull Fractures."——Dr. Elsworth S. Smith, St. Louis, addressed the medical section of the Wayne County Medical Society, November 10, on "Cardiac Irregularities Associated with Thyroid Disease."——Dr. Lynne A. Hoag, New York, addressed the Detroit Pediatric Society, November 11, on "Chemical Changes Occurring in Dehydration."——Dr. Walter H. Baker, South Bend, Ind., addressed a recent meeting of the Berrien and Cass county medical societies in Niles on "Certain Aspects of Orthopedic Surgery."

MISSOURI

Jackson County Activities.—Dr. Robert M. Isenberger, associate professor of physiology and pharmacology, University of Kansas School of Medicine, Kansas City, addressed a joint meeting of the Jackson County Medical Society, the Kansas City Retail Druggists' Association and the Kansas City School of Pharmacy, October 20, on "The Evolution of Pharmacology in Medicine"; Paul N. Leech, Ph.D., director, Chemical Laboratory, American Medical Association, spoke on "Rational Materia Medica." "Chronic Dental Infections" was the general subject discussed at a joint meeting of the Jackson County Medical Society and the Kansas City Dental Society, October 27. At a joint meeting of the Kansas City Bar Association, the Kansas City Southwest Clinical Society and the Jackson County Medical Society, November 10, the speakers included Drs. Hermon S. Major on "Some Observations of the Causes of Medical Malpractice Suits"; Charles E. Hyndman, St. Louis, "Functions and Activities of the Medical Defense Committee of the Missouri State Medical Society," and Henry N. Tihen, Wichita, Kan., "Progressive Methods as Applied to County Medical Societies." The Jackson County Medical Society was addressed, November 17, by Drs. Carl H. Bryant Schutz, Kansas City, on "A New Liver Syndrome"; Caryl A. Potter, St. Joseph, "Duodenal and High Intestinal Fistula"; Louie F. Barney, Kansas City, Kan., "A New Method of Treating Acute Peritonitis," and Thomas Grover Orr, Kansas City, "Effect of Sodium Chloride on Peristalsis and Its Value in the Treatment of Postoperative Ileus."

NEBRASKA

Joint District Meeting.—The twelfth and sixth councilor district medical societies held a joint meeting at Alliance, October 2, attended by seventy-five physicians and forty dentists. The Box Butte County Medical Society held a clinic at St. Joseph's Hospital in the morning. In the afternoon a program of scientific papers was presented with the following speakers: Drs. John A. Phipps, Scottsbluff, on barbituric acid derivatives; William L. Shearer, Omaha, the maxillary sinus; Tom P. Mullins, D.D.S., Chadron, dental diagnosis; George Alexander Young, Omaha, treatment of epidemic meningitis; Clyde A. Roeder, Omaha, relation of the pharynx and larynx to the goitrous thyroid; James R. Taylor, Sidney, circumcision, and Edwin Davis, Omaha, perineal prostatectomy.

University Hospital Staff Appoints Cancer Committee.—The surgical staff of the college of medicine, University of Nebraska, recently appointed a special committee of twelve members for the treatment and study of malignant disease. All cases brought to the university hospital will be referred to an executive committee composed of Drs. Chester H. Waters, chairman, Alfred J. Brown, Herbert H. Davis and Howard B. Hunt. After careful study each case will be referred to the member of the larger committee representing the specialty in which the case belongs. Plans call for a more detailed history than usual, careful following out of the treatment agreed on by the committee and careful follow up. It is the duty of the executive committee to keep in contact with each patient and to keep complete records of his case. In addition to the executive committee, members are Drs. George P. Pratt, Alfred Schalek, Harold E. Eggers, Robert D. Schrock, William L. Shearer, William H. Stokes, Philip Romonek and Charles A. Owens, Jr.

Society News.—At the meeting of the Seventh Councilor District Medical Society, Clay Center, October 22, speakers were, among others, Drs. William N. Nelson, Hardy, "Arteriosclerosis of Lower Extremities" and John C. Thompson, Lincoln, "Constipation and Allied Intestinal Disorders." Following a dinner given by the Clay County Medical Society, Dr. Roy W. Fouts, Omaha, spoke on "Liability Insurance" and Dr. Lucien Stark, Norfolk, president, Nebraska State Medical Association, gave an address.——Drs. Walter R. Johnson and Clifford J. Barborka, Rochester, Minn., addressed the Omaha-Douglas County Medical Society, October 27, on "Significance of Jaundice Without Pain" and "Practical Treatment of Obesity," respectively. At the meeting, November 10, Drs. Donald J. Wilson and John J. Keegan, among others, spoke on "Exfoliative Dermatitis and Thrombo-Angiitis Obliterans" and "Meningeal Hemorrhage," respectively.——Drs. Albert N. B. Lemoine, Kansas City, and Fred J. Pratt, Minneapolis, addressed the Sioux Valley Eye and Ear Academy at a meeting in Omaha, November 18, on "Management of Cataracts and Their Complications" and "Operative Points Which Make Intranasal Operations Successful," respectively. An afternoon session was devoted to case reports and conferences.——Drs. Donald J. Wilson and Herbert H. Davis, Omaha, addressed the meeting of the Eighth Councilor District Medical Society, O'Neill, October 1, on ringworm and the injection treatment of varicose veins, respectively.——The Fillmore-Saline County Medical Society was organized in September. Dr. Elmer M. Hansen, Lincoln, addressed the first meeting on obstetrics.

NEW YORK

Personal.—Dr. Eugene W. Bogardus of the staff of the state department of health resigned, October 1, to join the staff of the Westchester county health department.——Dr. Henry L. Stickney, medical officer in charge of the U. S. Veterans Hospital, Sunmount, N. Y., was recently elected surgeon general of the National Military Order of the World War.——Dr. Gordon F. Willey, formerly of Harrisburg, Pa., has been appointed superintendent of the Institution for Mentally Defective Delinquent Women, Albion.

Symposium on Poliomyelitis.—A symposium summarizing present knowledge of poliomyelitis was held in Albany, November 12, under the auspices of the state department of health and a group of pediatricians of New York and adjacent territory in Canada. Among the speakers were Drs. William Lloyd Aycock, director, Harvard Infantile Paralysis Commission, Boston; George Draper, associate professor of clinical medicine, Columbia University College of Physicians and Surgeons; Simon Flexner, director, Rockefeller Institute for Medical Research; William H. Park, director, bureau of laboratories, New York City department of health, and Dr. John G. Fitzgerald, director, Connaught Laboratories, University of Toronto.

New York City

Eye Clinic for Seamen.—An eye clinic for merchant seamen of every nationality was opened, October 30, by the Seamen's Church Institute of New York at its headquarters, 25 South Street. This is the second special unit established by the institute to meet the need of seamen for adequate medical and dental service; the first was a dental clinic opened in July. The new clinic is known as the John Markle Clinic, in tribute to the donor. Dr. Giovanni Paccione is in charge of the unit under the supervision of Dr. Conrad Berens. It will be open Tuesday and Friday mornings.

Smoke Abatement.—According to the New York *Times*, the trial board of the health department for smoke offenders heard 1,400 cases in the first twelve months of its operation, starting Oct. 2, 1930. Inspectors of the smoke squad investigated 10,790 complaints. Of the eighty-nine cases brought to court since the campaign started, only three have been dismissed, it was reported. The defendants in 75 per cent of the cases received suspended sentences, while the remainder paid fines of from $5 to $100. Up to October 24, twenty-six cases were pending, twenty-one of which were violations by boat owners in the harbor. The campaign is being directed particularly against power houses and steamships, it was stated. According to an estimate by Samuel Sargeant, head of the smoke squad and one of the three members of the trial board, the smoke evil has been reduced 60 per cent.

Lectures on Communicable Diseases.—Courses of lectures on communicable diseases are being offered free to the medical profession of New York City by the attending staff of the Kingston Avenue Hospital, Brooklyn. Each course consists of three clinical lectures and one conference on pathology. The lectures are given Tuesday, Thursday and Saturday of each week and the conferences on pathology the third Tuesday of each month by Dr. Maximilian A. Goldzieher. For November, December and January, the lectures are to be conducted by Drs. Kenneth G. Jennings, on diphtheria; Lee W. Thomas and Sylvan D. Lazarus, scarlet fever, and Murray B. Gordon, measles, poliomyelitis, meningitis and mixed infections. For further information, physicians are asked to communicate with Dr. Kenneth D. Nichol, medical superintendent, Kingston Avenue Hospital, Brooklyn.

Joint Meeting of Physicians and Dentists.—The joint committee of the medical and dental professions of Greater New York has arranged for a meeting, November 30. The program includes three addresses on the relationship between dentistry and diseases of the ear, nose and throat, with Dr. Richard T. Atkins, George M. Dorrance, D.D.S., and Lester R. Cahn, D.D.S., as speakers; and three on the relationship between dentistry and pediatrics, with Dr. Royal Storrs Haynes, Leroy M. S. Miner, D.D.S., and William D. Tracy, D.D.S., as speakers. At an evening session, Dr. Russell L. Cecil will speak on "Bacteriology of Dental Infections and Its Relation to Systemic Diseases"; E. H. Hatton, D.D.S., "Oral Diagnosis and Its Relation to Diseases in Other Parts of the Body," and Alfred Walker, D.D.S., "The Triangle in a Modern Health Problem—the Physician, the Dentist and the Patient."

Racketeers Impersonate Health Inspectors.—The department of health recently issued a warning to proprietors of restaurants and lunch rooms against persons representing themselves as official inspectors. These "easy money racketeers" visit restaurants and note the expiration date of the permits. If a permit has expired, the alleged representative of the health department offers to have it renewed for the payment of a specified sum. If the proprietor acquiesces, he not only loses the money paid to the racketeer but runs the risk of prosecution for failure to display a valid permit and eventually has to pay the regular fee to the health department. The health commissioner reminded these proprietors that authorized representatives of the health department are not empowered to collect money and are not permitted to offer to have permits renewed or to have any other violation overlooked. He further advised all restaurateurs to call the police when any alleged representative of the health department offered to perform any service for pay.

OHIO

Dr. Adrian Delivers Hanna Lecture.—Dr. Edgar Douglas Adrian, Foulerton research professor of the Royal Society, Cambridge University, England, delivered the twenty-eighth Hanna Lecture at the Institute of Pathology, Cleveland, November 10, on "The Nervous Mechanism of Sensation and Movement."

Personal.—Dr. William M. Doughty was installed as president of the Cincinnati Academy of Medicine, September 28. ——Dr. Charles A. Neal, Columbus, former state health commissioner, has been appointed superintendent of the Hamilton County Home, Hartwell.——Dr. George P. Tyler, Sr., was recently elected mayor of Manchester.

Carbon Monoxide Poisoning.—Deaths from carbon monoxide poisoning associated with gas-heating appliances showed a decrease in Ohio during the year July 1, 1930, to June 30, 1931, the *Ohio Health News* reports, but deaths from breathing the exhaust fumes of automobiles increased. The records showed twenty-nine deaths associated with heating appliances, of which heaters in bedrooms and water heaters were the leading offenders. Two cases were suicides. In the previous year there were fifty-two deaths from this cause. Out of a total of ninety-eight automobile exhaust mishaps in the year reported, there were forty-one deaths, five of which were apparently suicides. This number compares with thirty-five deaths out of eighty-four cases of poisoning in the preceding year.

Society News.—Recent speakers before the Cincinnati Academy of Medicine have been Drs. Edmund Prince Fowler, New York, October 6, on the prevention and cure of deafness; Joseph Treloar Wearn, Cleveland, "Relationship of Thebesian Circulation to Heart Disease," and Edward D. King, Cincinnati, "Plastic Surgery of the Nose." Dr. William F. Braasch, Rochester, Minn., will address a joint meeting of the academy and the Cincinnati Urological Society, November 23, on the polycystic kidney.——Dr. William Ravine addressed the Cincinnati Obstetrical Society, November 12, on "Puerperal Psychosis."——Drs. John D. Fouts, Dayton, and Berton M. Hogle, Troy, addressed the Miami County Medical Society, Piqua, October 9, on "Endoscopic Work as an Aid to Diagnosis in Upper Thoracic Pathology" and "Skeletal Traction in Fractures," respectively.——Dr. Clyde L. Cummer, Cleveland, addressed the Huron County Medical Society, Norwalk, October 9, on treatment and prevention of ringworm infection.——Dr. George C. Fedrow, Zanesville, addressed the Muskingum County Academy of Medicine, October 7, on chorea and its treatment.——The Columbus Academy of Medicine held a clinicopathologic conference on bacterial endocarditis, October 12, with Drs. Lear H. Van Buskirk, Solomon A. Hatfield and Ernest Scott as speakers.——Drs. Floyd C. Hendrickson, Canton, and William E. Lower, Cleveland, among others, addressed the Union Medical Association (the sixth councilor district), Wooster, October 14, on "Surgery of Infections of the Lower Urinary Tract" and "Present Status of the Prostate Gland," respectively.——Drs. Hugh Wellmeier and Wallace B. Taggart addressed the Montgomery County Medical Society, Dayton, November 6, on "Congenital Syphilis" and "Deficiency Diseases in Infancy," respectively.——At a meeting of the Toledo Academy of Medicine, November 6, Drs. Karl D. Figley and Thomas H. Brown spoke on "Food Allergy" and "Medicolegal Aspects of Industrial Medicine," respectively.——Dr. Luther C. Peter, Philadelphia, addressed the Cleveland Ophthalmological Club, November 9, on "Monocular Esotropia."

OREGON

Society News.—County medical societies have recently been organized in Union and Umatilla counties.——Dr. Banner R. Brooke, Portland, discussed proctology and Dr. Harvey J. Clements, Salem, the electrocardiograph, at a meeting of the Marion-Polk-Yamhill Counties Medical Society, in September. ——Drs. DeWitt C. Burkes and Henry H. Dixon addressed the Portland City and County Medical Society, November 4, on "Scope of Psychiatry" and "Relations of Psychiatry to General Disorders," respectively.

State Medical Election.—At the annual meeting of the Oregon State Medical Society in Eugene, October 22-24, Dr. Albert E. Mackay, Portland, was made president-elect, and Dr. Edward L. Zimmerman, Eugene, was installed as president. Other officers include Drs. Harvey J. Clements, Salem, William T. Johnson, Corvallis, and Frank E. Butler, Portland, as vice presidents; Albert W. Holman, Portland, secretary, and Karl H. Martzloff, Portland, treasurer. The executive secretary of the society is Mr. Clyde C. Foley, Portland.

PENNSYLVANIA

Society News.—Drs. Paul Titus and Robert M. Entwisle addressed the Pittsburgh Academy of Medicine, November 10, on "Sterility: Its Cause and Treatment" and "Diverticulosis of the Sigmoid," respectively.——The Lycoming County Medical Society held its semiannual clinic meeting, November 13, in connection with the northeastern chapter of the Jefferson Alumni Association at Williamsport. Drs. Thomas McCrae, Thomas A. Shallow and Willis F. Manges, Philadelphia, conducted clinics in the morning and made addresses in the afternoon, speaking on "Troubles of the Colon," "Surgery of the Sympathetic Nervous System" and "Primary Carcinoma of the Lungs and Its Treatment," respectively.——Drs. Melvin E. Cowen and Thomas H. A. Stites, Cresson, addressed the Cambria County Medical Society, Johnstown, November 12, on diagnosis and treatment of tuberculosis in children and in adults, respectively.

Philadelphia

Anniversary of Discovery of Cause of Syphilis.—The twenty-fifth anniversary of Schaudinn's discovery of Spirochaeta pallida was marked by a special meeting of the College of Physicians of Philadelphia, November 9. During the day there was an historical exhibit of incunabula, rare books, prints, portraits and medals relating to the history of syphilis and a technical exhibit of equipment used in the modern treatment of the disease, with demonstrations. At an evening meeting, speakers were Drs. Jay Frank Schamberg, on "Is Syphilis America's Gift to the World?"; John H. Stokes, "Schaudinn," and Henry E. Sigerist, Leipzig, Germany, "Fracastoro and His Poem."

Tuberculosis Conference.—Ten years of progress in tuberculosis control were reviewed at a conference, November 10, arranged by the Philadelphia Department of Health, Philadelphia County Medical Society, Philadelphia Association of Tuberculosis Clinics and Philadelphia Health Council and Tuberculosis Committee. Drs. Charles J. Hatfield and Robert G. Torrey, among others, discussed changes in the attack on the disease in the last decade. Special examinations of school children were described by Drs. Hubert W. Hetherington and

Paul B. Kreitz. Among other subjects presented were "Present Facilities and Immediate Needs for Tuberculosis Control in Philadelphia," by Dr. Abraham J. Cohen, and "The Problem of Additional Beds for Tuberculosis," Dr. Seth A. Brumm.

Lectures on Medical Physics.—The second annual series of lectures on medical physics sponsored by the Eldridge Reeves Johnson Foundation of the University of Pennsylvania was given, October 13-28, by Dr. Edgar Douglas Adrian, Fouler-ton research professor of the Royal Society at Cambridge University, England. His subjects were as follows:

October 13, "The Nerve Fiber as a Means of Communication."
October 14, "The Sensory Message and Its Relation to the Stimulus."
October 20, "The Action of Different Sense Organs: Some Outstanding Problems."
October 21, "Impulses in Efferent Nerves: The Grading of Muscular Contraction: Sympathetic Discharges."
October 28, "The Activity of the Nerve Cells."

An honorary degree of doctor of science was conferred on Dr. Adrian at a convocation of the university, October 13, at which he delivered the first address of the series.

TENNESSEE

Society News.—Dr. Joseph F. H. Gallagher addressed the Nashville Academy of Medicine, October 20, on fractures of the femur.——Dr. Thomas D. Moore, Memphis, addressed the Dyer, Lake and Crockett Counties Medical Society, Dyersburg, October 14, on "Diagnosis and Management of Stones in the Kidney."——Dr. Robert F. Patterson addressed the Knox County Medical Society, Knoxville, October 27, on "Stiff Joints and Their Management." Dr. Richard G. Waterhouse addressed the society, October 20, on "Hernia in Children."——Drs. William T. Fitts, Jackson, and William C. Chaney, Memphis, addressed the Benton, Carroll, Henry and Weakley County Medical Society, in September, on "Functional Heart Disease" and "Diseases of the Heart Associated with Other Conditions."——Dr. Ervin P. Vaughan, Manchester, addressed the September meeting of the Coffee County Medical Society on "Cause and Effect of Rheumatism."——Dr. Herman Spitz, Nashville, presented a paper on "Food Allergy and Hay Fever" before the Davidson County Medical Society, October 13.——Dr. Percy W. Toombs, Memphis, among others, addressed the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society, Waynesboro, September 29, on "Present Status of the Treatment of Puerperal Fever."——Dr. John A. McIntosh, Jr., addressed the Memphis and Shelby County Medical Society, September 1, on aleukemic leukemia.——Drs. Evander M. Sanders and Herman Spitz, Nashville, addressed the Robertson County Medical Society, Greenbrier, October 20, on "Graves' Disease" and "Food Allergy and Hay Fever," respectively.——Among speakers at the semiannual meeting of the Middle Tennessee Medical Association, Fayetteville, November 5, were Drs. John R. Gott, Murfreesboro, "Hemorrhagic Pyloric Stenosis"; Hugh J. Morgan, Nashville, "Syphilitic Aortitis: An Evaluation of Diagnostic Methods" and William R. Cate, Nashville, "Functional Disturbances of the Stomach."——Drs. Richard G. Fish, Paris, and Virgil E. Massey, Huntingdon, addressed the Tri-County Medical Society, McKenzie, October 14, on "Anatomy, Physiology and Pathology of the Kidney" and "Diagnosis of Diseases of the Kidney," respectively.

VIRGINIA

State Medical Election.—Dr. James C. Flippin, University, was made president-elect of the Medical Society of Virginia at the annual meeting in Roanoke, October 6-8, and Dr. Isaac C. Harrison, Danville, was installed as president. Vice presidents for the coming year are Drs. George F. Simpson, Purcellville; Francis H. Smith, Abingdon, and Warren T. Vaughan, Richmond.

Society News.—Dr. James M. Hutcheson, Richmond, among others, addressed the Mecklenburg County Medical Society, September 15, on clinical aspects of coronary thrombosis.——Dr. Horton R. Casparis, Nashville, Tenn., addressed the Virginia Pediatric Society, Roanoke, October 7, on tuberculosis in children. Dr. Casparis also addressed the Southwestern Virginia Medical Society at its meeting in Marion, September 24-25, on allergy in children.——The South Piedmont Medical Society will hold a symposium on arthritis at its semiannual meeting, November 24, at Lynchburg, with Drs. David P. Scott, Thomas N. Davis, Jr., and Bernard H. Kyle, Lynchburg, and John J. Neal, Danville, as speakers.

State Conference on Child Health.—Governor Pollard has called a conference on child health and protection to be held in Richmond, November 23-24, as a follow up of the national conference held in Washington in 1930. Its objectives are to appraise work now being done in this field in Virginia and coordinate the work of all agencies in the state engaged in service for childhood. Four general committees have arranged for discussions of four divisions of the subject, with chairmen as follows: education, Sidney B. Hall; health and medical service, Dr. Warren F. Draper, state health commissioner; character and civic education, William T. Sanger, LL.D., and welfare, Frank Bane. Governor Pollard will officially open the conference and Dr. Ray Lyman Wilbur, secretary of the interior, Washington, D. C., will make an address. Gov. Albert C. Ritchie of Maryland will speak at the final session, when conclusions of the conference will be presented and discussed.

WISCONSIN

Orthopedic Hospital Dedicated.—The State of Wisconsin Orthopedic Hospital for Children at Madison was dedicated, November 8, with addresses by Gov. Philip La Follette; Glenn Frank, LL.D., president of the University of Wisconsin; Ben F. Faast, president of the board of regents; Dr. Charles R. Bardeen, dean and professor of anatomy of the University of Wisconsin Medical School; Dr. Otho A. Fiedler, Sheboygan, president of the State Medical Society of Wisconsin, and Irving Mauer, Beloit, president of the Wisconsin Association for the Disabled. This hospital, which was authorized by the state legislature in 1929, is affiliated with the teaching hospitals of the University of Wisconsin. It has a capacity of 125 beds and cost $300,000. Patients are cared for at the joint expense of county and state. Dr. Bardeen reports that it was finished in time to meet the special demands of the recent epidemic of poliomyelitis.

Society News.—Among speakers at the annual meeting of the Wisconsin Anti-Tuberculosis Association, Milwaukee, November 2-3, were Drs. Jay Arthur Myers, Minneapolis, on "Newer Facts on the Childhood Type of Tuberculosis"; Harold Douglas Singer, Chicago, "Mental Hazards in the Care of Tuberculosis"; William S. Middleton, Madison, "A Changing Viewpoint in the Treatment of Tuberculosis," and Louis M. Warfield, Milwaukee, "An Age Group Comparison of Heart Disease and Tuberculosis."——Dr. Ralph M. Carter addressed the Green Bay Academy of Medicine, October 14, on "Fractures of the Lower Extremities."——Drs. Forrester Raine and Charles S. Williamson, Chicago, addressed the Medical Society of Milwaukee County, November 13, on "Indications for and Results of Phrenic Nerve Block" and "Mediastinal and Pulmonary Tumors," respectively.——Dr. Albert E. Russell, U. S. Public Health Service, addressed the Milwaukee Academy of Medicine, November 10, on "Dust as an Etiological Factor in Pulmonary Diseases."——Drs. James C. Sargent and Mynie G. Peterman, both of Milwaukee, addressed the Douglas County Medical Society, Superior, October 28, on "Intravenous Urography and Floating Kidney" and "Problems in Pediatrics," respectively.——Drs. John L. Yates, Milwaukee, and Max Cutler, Chicago, addressed the Rock County Medical Society, Janesville, October 27, on cancer of the breast and treatment of cancer.——Dr. Samuel F. Haines, Rochester, Minn., addressed the October meeting of the Brown-Kewaunee County Medical Society, Green Bay, on goiter and conducted a goiter clinic.——Dr. William S. Middleton, Madison, addressed the Outagamie County Medical Society, Appleton, October 28, on pulmonary tuberculosis.——Speakers at the annual meeting of the Central Wisconsin Society of Ophthalmology and Oto-Laryngology, Marshfield, October 12, were Drs. Fred J. Pratt, Minneapolis, on "Indications for Tonsillectomy" and "Operative Points Which Make Intranasal Operations Successful"; Walter E. Camp, Minneapolis, on "Sympathetic Ophthalmia" and "Melanotic Tumors of the Eye," and Wellwood M. Nesbit, Madison, on "Intracranial Complications of Ear Infections."

GENERAL

Medical Women's International Association.—The sixth meeting of the Medical Women's International Association, an organization formed in New York in 1919, was held in Vienna, September 15-20. Two questions were discussed at the scientific meetings: "The Rôle of Medical Women in Exotic Countries" and "Legal Protection of Women Workers." Among American women physicians who participated were Drs. Mary O'Malley, Washington, D. C.; Kate Campbell H. Mead, Haddam, Conn.; Louise Tayler Jones, Washington, D. C.; Olga F. Stastny, Omaha, and Anna Dengel, Washington, D. C.

Meeting of Pediatricians.—Dr. Frank C. Neff, Kansas City, was elected president of the Central States Pediatric Society at its sixteenth annual meeting, October 16-17, in Cincinnati. Dr. Julius H. Hess, Chicago, was elected vice president and Dr. Arthur H. Parmelee, Chicago, reelected secretary. Among speakers were Drs. Henry Dwight Chapin, Bronxville, N. Y., on the Speedwell plan for care of convalescent children;

Albert Graeme Mitchell and Merlin L. Cooper, Cincinnati, "Treatment of Asthma by Bacterial Sensitization"; Ralph G. Carothers, Cincinnati, treatment of osteomyelitis with maggots, and Glenn E. Cullen, Ph.D., Cincinnati, diagnosis and treatment of acidosis. The 1932 meeting will be held in Kansas City.

Society News.—The joint meeting of the American Association of Railway Surgeons and the Surgical Association of the Illinois Central System, which was to have been held in St. Louis, November 5-7, was postponed to 1932.——Dr. William J. Mayo, Rochester, Minn., was chosen president-elect of the Interstate Postgraduate Medical Association at its recent meeting in Milwaukee; Dr. Arthur Dean Bevan, Chicago, was installed as president.——The Canadian National Research Council has announced that the Fifth Pacific Science Congress, which was to have been held in Victoria and Vancouver, B. C., May 23-June 4, 1932, has been postponed.——The sixteenth annual session of the American College of Physicians will be held in San Francisco, April 4-8, 1932.——The twelfth annual meeting of the Association for Research in Nervous and Mental Disease will be held in New York, December 28-29.

News of Epidemics.—Dr. John L. Jones, state epidemiologist, recently reported that 1,080 cases of diphtheria had been reported to the Kentucky state health department between August 1 and October 24. During the corresponding period in 1930, only 131 cases were reported. These figures are from only 70 of the 120 counties in the state and probably represent less than half the actual number of cases, according to Dr. Jones.——Nine cases of smallpox occurred in a public school in Moline, Ill. The school was closed one day, October 27, for disinfection and health officials ordered that every student be vaccinated before November 1.——Schools were recently closed in Monroe, Ind., and Homer, Ohio, because of scarlet fever. Ten cases occurred in the Monroe school and four in Homer.——Seven cases of typhoid were reported to the health department of Henry County, Ky., between October 24 and November 6. Ten cases were reported in Hopkins County, November 3.

Committee to Study Prison Diets.—At the meeting of the medical section of the American Prison Association, October 19-21, during the association's sixty-first annual congress in Baltimore, a committee was appointed to study prison diets in various institutions throughout the country. The committee consists of Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service, chairman, Dr. John C. Lindsay of the Connecticut State Reformatory, Cheshire, and Dr. George H. Preston, commissioner of mental hygiene for Maryland. A report with standard recommendations will be submitted at the next annual session, which will be held in Indianapolis. The medical section also plans to devote a session of the next meeting toward its effort to raise the standard and efficiency of the medical care of the prison population. Officers of the section elected at the recent meeting are Dr. Amos T. Baker of Sing Sing Prison, Westchester County, N. Y., president; Dr. Treadway, vice president, and Dr. James L. McCartney of the Elmira Reformatory, New York, formerly director of the bureau of mental hygiene of Connecticut, secretary.

Radiological Society of North America.—The seventeenth annual meeting of the Radiological Society of North America will be held in St. Louis, November 30-December 4, with Dr. Bundy Allen, Tampa, Fla., as president. Many of the sessions will be organized as symposiums. Among speakers will be Drs. James Ewing, New York, "Pathological Study of Myeloma or Ewing Tumor"; Henry K. Pancoast and Bernard J. Alpers, Philadelphia, "Effect of Irradiation on Normal and Neoplastic Brain Tissues"; Leon T. LeWald, New York, "Roentgenological Examination of the Digestive Tract of Infants and Children"; Joseph Colt Bloodgood, Baltimore, "Working Rule in the Diagnosis and Treatment of a Lesion of Bone"; Byrl R. Kirklin, Rochester, Minn., "Neoplastic Diseases of the Stomach"; Evarts A. Graham, St. Louis, "Diagnosis of Diseases and Abnormalities of the Liver and Gallbladder"; Ernst A. Pohle, Madison, Wis., "Effect of Roentgen Rays on Healing of Wounds"; George H. Semken, New York, "Radical Surgery in Treatment of Cancer"; Vilray P. Blair, St. Louis, "Surgical Repair of Radium and X-Ray Keratoses"; Manuel F. Madrazo, Mexico City, "Treatment of Thyrotoxicosis by Means of Roentgenotherapy"; Dallas B. Phemister, Chicago, "Pathology of Certain Types of Bone Tumors"; George E. Pfahler, Philadelphia, "Results of X-Ray Treatment on Bone Malignancy"; Harrison S. Martland, Newark, N. J., "Bone Sarcoma by the Injection of Radioactive Substances"; Otto Glasser, Ph.D., Cleveland, "Evolution of the Roentgen Rays" and Gioacchino Failla, Sc.D., New York, "Protection from Gamma Rays and 900 K. V. X-Rays." Headquarters will be at the New Jefferson Hotel.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 31, 1931.

Dietary Control of Dental Decay

The experimental work of Mrs. May Mellanby on the effect of diet on the teeth is well known and has been summarized in previous letters (THE JOURNAL, March 8, 1930, p. 728; April 13, 1931, p. 1324). Since 1929 she has been making reports to the Medical Research Council on the influence of nutrition on the development of the teeth and jaws in dogs and other animals, and on the experimental production of dental and periodontal disease. A report is now being prepared on the influence of diet on human teeth and their resistance to disease. In the preface to an interim report, the council declares that the body of new knowledge so presented is of immeasurable value for the promotion of public health and for the lessening of pain and facial disfigurement. The trial of controlling dental decay in children's teeth by a slight modification in the quality of the diet has already given results confirming those obtained both in animals and in man. The results now announced relate only to children's teeth already formed at the beginning of the trial. These are so striking that the dental committee of the council thought they justified an immediate interim report. Another year or two must pass before the results of modified diet can be shown in the teeth that have been in the course of development since the beginning of the trial.

Mrs. Mellanby has already shown that the teeth of growing dogs can to a large extent be controlled by dietetic measures, that teeth of good structure can invariably be secured by an adequate supply of fat-soluble vitamins, especially vitamin D, and that, whatever the dental structure, the amount and character of the secondary dentin formed in response to an outside stimulus, such as attrition, depends largely on the supply of these vitamins. She has also shown that caries is especially predominant in deciduous human teeth of defective calcification, as indicated macroscopically by roughened surface and microscopically by interglobular spaces and changes in the enamel; and that when caries occurs in well calcified teeth, the secondary dentin is usually defective both in structure and in amount. These observations suggest that it is possible to produce teeth of good structure by dietetic measures in man and that such teeth will be relatively immune to caries. They also suggest that similar measures may increase the resistance to caries in teeth already formed. The last suggestion received support from investigations at a hospital for surgical tuberculosis in Sheffield. In the teeth of children whose diet contained an additional amount of fat-soluble vitamins, mainly vitamin D, caries developed to a much smaller extent than in the teeth on the standard hospital dietary, and an ample supply of these vitamins promoted arrest of active caries. The Medical Research Council therefore decided that the time had come for an investigation on a large scale. This was done at three residential institutions in Birmingham accommodating under uniform conditions 835 children, aged from 2½ to 16 years. The standard dietary, judged by all ordinary standards, was thoroughly satisfactory. It was generous, but not particularly rich in fat-soluble vitamins. The method was to add a definite item to the diet of all the children in each institution: in one, a ration of cod liver oil (containing vitamins A and D); in the second, a corresponding ration of treacle; in the third, a similar amount of olive oil. Both the latter items contain important food elements without the fat-soluble vitamins. Every child was submitted at intervals of six months to careful dental inspection by a dental surgeon. After a period of two years, it was found that the progress of caries in the permanent teeth

had been retarded in those children receiving the added ration containing the fat-soluble vitamins as compared with those receiving treacle or olive oil. The increase of caries in the vitamin group, whether measured by incidence or by extent, was one third of that in the other groups. There was no significant difference between the children receiving olive oil and those receiving treacle. A further experiment was made by dividing into two groups the children of one institution who were receiving in addition to the standard dietary a ration of olive oil. For a period of eighteen months, a solution of vitamin D, in the form of viosterol, was added to the oil of one group. The progress of caries was significantly retarded in the group taking the vitamin as compared with that which did not. The conclusion is that the incidence and progress of caries in teeth, either fully or nearly fully calcified, can be considerably retarded by the addition of fat-soluble vitamins to a normal diet. The similarity of the results obtained from cod liver oil and from viosterol suggests that the potent factor in the retardation was vitamin D.

The Message of Harvey Today

At the annual Harveian Commemoration of the Royal College of Physicians the oration was delivered by Dr. Robert Hutchison, whose subject was "Harvey: The Man, His Method and his Message for Us Today." Dr. Hutchison said that while in the apparatus of knowledge we had immense advantages compared with the men of Harvey's day, our danger was that, owing to accumulation of knowledge, science might be suffocated in its own secretions. A remedy for this was a pressing need. Specialism was inevitable but, though favorable for the accumulation of facts, it was bad for the philosophy of knowledge. There was too little speculation and too little use of the imagination, and most scientific literature was barren in ideas. It might be a good thing if there was a closed time in laboratory work for, say five years, to enable us to digest the huge accumulation of knowledge and to think out new lines. A wise conservatism in medicine was to be commended. It would save us from ephemeral fashions in pathology and treatment, which so much brought the art into discredit.

Surveying the field of medicine as a whole, he found indications of a return to the hippocratic outlook, which attached more importance to the reactions in the tissue fluids than in the tissues, which was vitalistic rather than mechanistic, and which took into account the influence of the "constitution" and of psychologic factors in disease. This new outlook might demand a new anatomy and a new clinical physiology, and would make new demands on clinical observation and lead to new methods of treatment. We needed also liaison officers between the pure sciences and clinical medicine, and above all, generalizers and thinkers. Observation and experiment had already given us facts—too many facts. We needed men of imagination, of the contemplative style of Harvey, to bind the facts into sheaves and to educe from them general laws. Unfortunately, the prevalent contempt for the humanities and for pure knowledge, characteristic of a civilization directed to merely material ends, was unfavorable to such work. We trained skilled technicians rather than educated men. However, the clinical atmosphere would probably be more favorable to the production of generalization than that of the laboratory, for the gifts required were those of the diagnostician.

The Breaking of Hypodermic Needles

The breaking of hypodermic needles during injection, leaving the broken fragment in the tissues of the patient, continues to furnish one of our great medical defense societies, the London and Counties Medical Protection Association, with a difficult problem. The physician or the dentist who administers the injection incurs a legal liability for negligence to the patient, who can allege want of skill. If the physician pleads that he used the needle correctly but that there was some flaw in its manufacture, he is liable for using such a needle, though for this the manufacturer has a liability to him. But the trouble is that it is impossible to say why certain needles break and whether this is due to any flaw in their manufacture. It has been suggested that they may be injured by antiseptic solutions. As shown in a previous letter (THE JOURNAL, Aug. 9, 1930, p. 423), the London and Counties Medical Protection Society thoroughly investigated the subject and consulted expert metallurgists. They issued in their annual report a number of recommendations: 1. A new needle should be used in every case. 2. Needles should never be "flamed," as this may injure the temper. 3. As the needle always breaks at the point of entry into the holder, a short holder should be used, so that if fracture occurs a large portion will remain in the tissues, and thus be more easily removed. 4. Needles should not be kept in watery solutions. 5. Better results are obtained from needles made of alloy steels (such as stainless steel), which do not require subsequent heat treatment and are generally more flexible than those made of carbon steel. But, though these recommendations were issued two years ago, the breakages continue to occur. The secretary of the society, Dr. Hugh Woods, attributes some of the accidents to the use of too fine needles. Though roentgenography has been employed, it has generally proved impossible to remove the fragment by operation. So far, no case has been taken into court, but in some cases damages have been paid to settle the matter.

PARIS

(From Our Regular Correspondent)

Oct. 14, 1931.

The French Congress of Surgery

The fortieth annual Congrès de l'association française de chirurgie, presided over this year by Prof. O. Lambret of Lille, was well attended—chiefly by French physicians. Among the foreign surgeons, the Belgians, the Swiss, the Rumanians and the Italians predominated. There were three topics on the program, and the official papers on these subjects were excellent, each constituting a complete survey of the field.

POSTOPERATIVE PEPTIC ULCERS

Professor Leriche of Lyons considered the pathogenicity of postoperative peptic ulcers. In his opinion, postoperative peptic ulcer is essentially a disease resulting from anastomoses performed on hyperacid stomachs. It appears following gastroenterostomy well performed in from 1.5 to 5 per cent of the cases. It occurs, but equally rarely, after excision followed by gastro-enterostomy. It is particularly frequent after antral exclusions (25 per cent). It is frequent after pyloric and transantral resections, which are often followed by hyperacidity and hypersecretion. It is rare after extensive pylorogastrectomies. It appears to be always induced by a hyperacidity of the gastric juice. It is not found when the operation performed has produced anachlorhydria. But, since one never knows in advance whether an operation will produce anachlorhydria, postoperative ulcer is always possible after any operation on the stomach. Hence, the rôle of acidity appears of chief importance with regard to the sequels of surgical interventions on man. All the rest is secondary. Postoperative ulcer appears, if it appears at all, invariably as a peptic ulcer, owing to the action of an acid secretion on an unprotected mucosa. It is the result of a continued evolution or a recurrence of the causative malady manifesting itself in a weakened area operatively created. The study of these conditions under which peptic ulcer appears makes it impossible to assign a decisive rôle to the contingent factors so often invoked: presence of a silk thread, local traumatism by clamps, use of a button for anastomosis, local infection, submucous hematoma,

operative traumatism, excision of superfluous mucous membrane, preoperative gastric infection.

TREATMENT OF PEPTIC ULCERS

The paper of Professor Gosset dealt with the treatment of peptic ulcers. He emphasized that the medical treatment of postoperative ulcers is more uncertain and deceptive than that of primary ulcers of the stomach and duodenum. It must not be prolonged, because of the tendency of these ulcers to perforate. Roentgenotherapy, as advocated in Germany, has been used in France by Ledoux-Lebard. It brings, in 70 per cent of the cases, marked relief, and sometimes disappearance of the pain symptoms, also a diminution in the volume of the inflammatory masses. The surgical treatment, which the author particularly favors, was explained by him with many operative details, and with these conclusions: the criteria for the treatment of peptic ulcer, which should always be early, are dominated by the recurring tendency of the ulcer, a tendency that is more marked if the patient is young and if the original ulcer was a duodenal ulcer. The two chief forms of intervention, anatomic restoration and extensive gastrectomy, are opposed to each other. Between them lies partial gastrectomy with gastroduodenal reunion. The mere suppression of the gastro-enterostomy is a poor intervention, as it brings about a recrudescence of the duodenal ulcer. It is necessary to supplement the gastro-enterostomy by a duodenectomy, with excision of the inner two thirds of the sphincter. The future will show better just what the value of this logical intervention is. If this anatomic restoration cannot be accomplished, there remain the following two resources: the creation of a new and better gastro-enterostomy, or the performance of a wide resection. A new gastro-enterostomy should be the last resort in these patients who have shown their predisposition to ulcers. As an isolated measure, a new gastro-enterostomy can be advised only in very weak and aged patients. Wide resection ought to ward off definitively the menace of peptic ulcer. To accomplish that, resection will comprise two thirds of the stomach, including the gastro-enterostomy and the peptic ulcer. The best reunion is in that case the Reichel-Polya anastomosis as modified by Finsterer, which necessitates the use of a distal jejunal loop for the suture of the jejunum. A Y-shaped anastomosis may be necessary; but this should be employed only exceptionally. The gastric resection may be confined to the pyloric portion (including the pylorus) provided in that case the Péan operation is performed. In this manner fairly good results may be secured; but this operation is not always possible. Gosset prefers extensive gastrectomy. This opinion is based on the good results of wide resection and the low percentage of recurrences. In the particular case of peptic ulcer following gastro-enterostomy with exclusion, one may seek to suppress the gastro-enterostomy and to reestablish the gastroduodenal continuity by means of a direct anastomosis. In very weak persons and in inoperable cases, jejunostomy may render good service. Exclusive jejunal alimentation may bring improvement in the presence of large ulcers and may facilitate later radical operation. In the case of perforated peptic ulcer, the indications depend on how early the intervention is resorted to. As a rule, an endeavor should be made to apply the general principles of surgery of peptic ulcer: excision of the ulcer, better drainage of the stomach, anatomic restoration; but often intervention should be confined to closing the perforation. The operation can be done in two stages: first, mere closing of the perforation, and, a few weeks later, anatomic restoration or prophylactic resection. The least harmful operation is the liberation of fistulized organs, with anatomic restoration whenever possible. Gastrectomy at the first onset is a grave intervention, involving a high mortality in case of simultaneous resection of the colon. Many took part in the general discussion that followed the presentation of these two papers.

PNEUMOCOCCAL PERITONITIS

The introductory paper on the second topic on the program, "Pneumococcal Peritonitis," a rather brief presentation, was offered by Bréchot and Nové-Josserand of Lyons. They brought out that the pneumococcus may be found in cases of peritonitis of extremely diverse origin, but that in such cases it is merely an associated organism. In those cases it figures as an ordinary control; or it may have prepared the way for other micro-organisms—but it is not preponderant. True pneumococcal peritonitis may appear isolated or associated with other manifestations of the same organism in the patient. The former condition is more frequent (60 per cent or more in children aged 3 to 12). In older children and in adults it is the pleuropulmonary disorders that are most often associated with pneumococcal peritonitis. Pneumonia is doubtless the most frequent cause. Pleural or pulmonary localization of the pneumococcus may precede the pneumococcal peritonitis or may develop simultaneously or may follow it, which is a very artificial distinction; for, most commonly, the pneumonia only apparently precedes the peritonitis. They begin at the same time; but the signs of the pneumococcal peritonitis are masked at the onset by the symptoms of pneumonia. Bréchot and Nové-Josserand pointed out the importance that Italian and Anglo-Saxon authors assign to the previous existence of sore throat, as a port of entry of the infection. Fiske, in six cases out of eight, observed pertussis. Often traumatism plays a part. Study of the symptomatology revealed the possibility of the most varied symptoms, the onset being sudden or preceded for several weeks by symptoms difficult to discover. The diagnosis is often difficult, especially when associated with appendicitis. There are incontestably certain mild forms that clear up spontaneously, which fact many surgeons consider justifies a waiting policy. But the tendency to operate early in every case of peritonitis appears at present dominant, especially among the Italian and Anglo-Saxon surgeons. Medical forms of treatment (vaccines, colloidal metals) are still a subject of controversy. The few speakers who discussed the matter brought no more clarity than the essayists.

IMMEDIATE SURGICAL TREATMENT OF OPEN FRACTURES

G. Roux of Montpellier and J. Senêque of Paris presented a comprehensive paper on the immediate surgical treatment of open fractures. They distinguish five different degrees of gravity. In the first two, which constitute the great majority, with a minimal skin lesion, the bone not splintered, or with only a slight displacement, not located in the uppermost third of the leg, recovery is a simple matter. Osteosynthesis is not indicated, although the ends of the bone must sometimes be kept in place by a catgut ligature. The skin will be sutured almost completely with slight drainage, or with a fenestrated dressing if the wound is small and not infected. A plaster cast is used to immobilize the limb. The third degree presupposes a large wound, with irreparable loss of substance, disturbance of the muscular beds without arterial lesion, and comminutive bone fracture or fracture of the uppermost third. The use of a metallic ligature may then be necessary rather than osteosynthesis by means of plates. The plaster cast or the splint will be used, depending on the case. The fourth degree is characterized by extensive detachments, lesion of the tibial artery and risks of further infection. The authors reject in such cases all forms of osteosynthesis, all application of pressure to the bone direct or indirect, and advocate continued extension with the aid of a stirrup or the Kirschner apparatus. Recovery will require several months, and the result will never be perfect. The fifth degree is represented by the crushing of the leg, and amputation is the only resource. First the state of shock must be treated, if it exists. In a general way, the authors regard osteosynthesis and the use of plates as commonly useless. In any event, osteosynthesis, if it fails, involves risks threatening the later function

of the limb, while primary suture may give rise to complications that will be a menace to the life of the patient. A slight drainage should therefore always be provided for, even in the cases that appear to be the most favorable. It would seem that in France sufficient use has not been made of external means of fixation, continued extension by means of the Finochietto stirrup or the Kirschner apparatus, in the treatment of these lesions. Many speakers took part in the discussion of this paper. Widely divergent views were expressed, some leaning too far toward absolute abstention from intervention and some being too ready for all forms of intervention.

In addition to the official papers there were many communications on topics chosen by the conventionists. Dr. Calot of Berck explained his treatment of coxalgia, which is bloodless, being confined to evacuatory punctures and to modifying injections into the articular focus, with prolonged application, under continued extension, of a plaster cast. The functional results are perfect. He presented to the assembly subjects who had been affected with tuberculosis of the bones or the lymph glands, and who had been cured by the same procedure. He spoke on chronic arthritis of the hip, which in half of the cases is the result of unobserved congenital lesions—bilateral lesions nineteen times out of twenty—with formation of a new acetabulum, owing to the gradual abrasion of the former acetabulum by the displaced head of the femur. These ideas awakened at first much controversy but today they are accepted by the majority of surgeons. Dr. Chiasserini of Venice advocated the resection of the lateral chains of the sympathetic system in trophovascular disorders of the limbs. Mr. de Martel of Paris explained his treatment for neuralgia of the trigeminal nerve by means of retrogasserian neurotomy. Mr. Froelich of Nancy described an ambulatory treatment for coxalgia. Mr. Soresi of New York described a method of surgical treatment for diabetes in children, based on a new pathogenic conception. Mr. A. Bécart presented examples of gastrophotography. Mr. Soresi, at the meeting reserved for the projection of films, showed a beautiful cinematographic film, in colors, of an operation for inguinal hernia.

In closing, the congress chose Prof. Pierre Duval of Paris as chairman of the session next year, and selected for discussion the following three topics: Surgical treatment of diseases of the blood; speakers, Quénu and Santy; surgery of cardiac disorders, traumatisms excepted; speakers, Leriche and Lenormant, and surgical treatment of nontuberculous arthritis of the hip; speakers, Cuneo and Rocher.

BERLIN

(From Our Regular Correspondent)

Sept. 28, 1931.

Brain Surgery

At the International Neurologic Congress held in Berne in September, under the chairmanship of Professor Nonne of Hamburg, the chief topic on the program was "Methods for the Diagnosis and for Surgical and Other Forms of Treatment in Brain Tumors." In the papers presented by eminent specialists from many different countries, the various diagnostic methods were successively explained, including the clinical symptomatology (Sir Purves-Stewart, London); the microscopic diagnosis; the roentgenologic diagnosis (Professor Schüller, Vienna; Professor Stenvers, Utrecht); roentgen diagnosis after encephalography (Professor Forster; Dr. Guttmann, Breslau, and Grant, Philadelphia); diagnosis from the lumbar fluid (Professor Kafka, Hamburg). The papers gave a complete survey of the present status of neurology, which has made rapid progress during the past decade, especially through the perfection of physicotechnical methods. Of course the therapeutic results depend to a great extent on the accuracy of the diagnosis. That is particularly true with respect to the chances of operative treatment in brain tumors, which Professor Cushing of Boston discussed in a comprehensive paper, based on his experiences with 2,000 brain tumors operated on during the past decade. Cushing demonstrated the degree of success attained during this period, which was due in part to improvements in diagnosis but chiefly to refinements in surgical technic. In view of the delicacy of the tissues concerned, the remote results fall short of those obtained in other surgical operations, and always will; but the observations reported point out the sure way for the best control of brain tumors, the treatment of which, until a few years ago, was hopeless. The contributions of Cushing were highly appreciated by all members of the congress.

Béclère of Paris discussed roentgen treatment of brain tumors and Hirsch of Vienna radium treatment of tumors originating in the hypophysis. Irradiation is to be regarded as supplementary to surgical treatment, being indicated in the treatment of tumors that, on account of their position, are not amenable to operative treatment, and for the after-treatment of malignant tumors that cannot be entirely removed. In this field also the results are commensurate with the improved technic and justify further hopes. In papers dealing with narrower phases of the subject, representatives of many countries presented supplementary material. In his closing remarks on the main subject, Nonne of Hamburg brought out that the successful results in the treatment of brain tumors presupposed the developments of modern surgery, in which surgeons of the United States had been the pioneers.

Further papers presented at the congress treated "The Acute, Nonsuppurative Infections of the Nervous System," "Anatomy, Physiology and Pathology of Muscular Tonus" (under the chairmanship of Sir Charles Scott Sherrington), and, finally, "The Causal Importance of Trauma in the Genesis of Nerve Symptoms." Among the papers dealing with the smaller phases of the subject, which, on account of their number, were presented in several sections meeting simultaneously, were the somewhat emotional presentations of Pavlov (aged 82), who was given an enthusiastic reception. The creation of an international neurologic society was decided on, the chief task of which will be, for the present, the organization of the second congress, which, at the invitation of the Royal Medical Society, will be held in London in 1935.

The Psychology of the Child Prodigy

Child prodigies have always attracted the attention of the public and of connoisseurs but they have seldom been studied to any extent in a scientific manner. Since the eleventh century, accounts of the wonderful accomplishments of children have been written. The belief is widespread that unusually early maturity is an unhealthy manifestation, and that children who at a tender age accomplish wonders are lacking in vital energy and are not likely to live long. This assumption is strengthened by the fact that physicians have seldom examined child prodigies unless they present some unusual physical manifestations. Only recently, a Swiss physician, Dr. Bienstock, published an article on his son, who developed early an unusual talent for music but who died in his twenty-third year from a tumor of the spinal column. Bienstock's article, "A Tumor of the Pineal Body," lays the chief emphasis on the disease and raises the question as to whether the disorder that was the immediate cause of death had any causal relation with the young man's early developed musical talent. Whenever psychologists have studied child prodigies they have been particularly interested in the child's accomplishments or performance. Dr. Franziska Baumgarten-Tramer, instructor in the University of Berne, recently subjected a number of child prodigies to an intelligence and character test and reported her observations in a book that she discusses in a recent number of the *Deutsche medizinische Wochenschrift*. As not all the parents were willing to accept such publicity, she was obliged to confine herself, for the present, to the results in examinations of an 8 year old danseuse, an 8 year old chess prodigy, a 6 year old pianist, a 9 year old piano

virtuoso, an 11 year old violinist (boy), a 14 year old violinist (girl), a 13 year old bandmaster, a 10 year old artist (drawings), and a 6 year old geographer.

A fact especially striking is that all the children examined took great delight in displaying their accomplishments. They never suffer from stage fright and want to perform as often as possible. Child prodigies are aware of the fact that they must provide for themselves and for their parents, that they should feel a sense of responsibility for the quality of their performance, and that they must strive for perfection in their art. This sense of responsibility explains the occasional overserious manner assumed by child prodigies, which is in marked contrast to their usual childlike demeanor; for they are fond of playthings and of playmates if opportunity is afforded them. Child prodigies are model children as to behavior. They are strongly attached to their parents and follow their instructions implicity. It is usually assumed that child prodigies are tormented by their parents, overzealous to extract from them the last ounce of profit. That appears to be the exception, for the parents know, or soon learn, that more can be accomplished through love than through application of severe measures. In the older children, the character is influenced by the intentionally emphasized childlikeness in such a manner that they often take on a certain manliness. The intelligence test, with a single exception, revealed a level that was far above the average. It showed that the children were by no means one-sided in their mental development. For example, the girl violinist showed considerable talent for drawing and possessed good technical understanding. The pianist possessed noteworthy talent for mathematics, and the danseuse marked ability in logical debate. In many fields the children showed ability in the solution of special tasks, which exceeded anything that experimental psychology had ever recorded. The chess prodigy committed in four minutes forty dates to memory, and the 9 year old pianist answered better the general searching questions intended for gifted children aged 12 to 14 than did several hundred such children. On the other hand, some remarkable and unexpected deficiencies were discovered. The young violinist was unable to bend a piece of wire into the simplest geometric shape, and the 9 year old piano virtuoso could not draw as well as a 4 year old child. The 8 year old chess prodigy who played simultaneously and won twenty games of chess with twenty of the best players of the Berlin chess club has no conception of the realities of the outside world, does not know the day of the month, and cannot distinguish the simplest coins. Most of the children were physically well developed. The authoress, who has been observing some of the child prodigies for more than ten years, found that a considerable number of these children are no longer developing in the direction that was so prominent in their childhood. For example, the chess prodigy is studying theology in America and is said to be a promising student. Probably this deflection of talents to another field is the chief basis for the assumption that child prodigies "peter out" in later life, a view that is expressed in the clever though somewhat caustic remark of Franz Liszt: "Child prodigies have their future in the past."

Hereditary Effects of Roentgen Rays

Owing to the increased number of indications for the use of radiation therapy, the question of the hereditary effects of roentgen rays on offspring has awakened interest. Two societies of recognized importance, the Deutsche Gesellschaft für Vererbungswissenschaft and the Deutsche Gesellschaft für Rassenhygiene, have adopted a definite attitude toward the question. They take the view that the possible damage to offspring by roentgen irradiation has been proved by a large number of exactly controlled experiments. Emphasis is laid on the danger to posterity through roentgen irradiation of the gonads, and especially from so-called temporary sterilization. Injuries to posterity are involved that possibly may not appear until after several generations.

NETHERLANDS

(From Our Regular Correspondent)

Oct. 2, 1931.

Inquiry on Restrictions on Dispensing Alcoholic Beverages

The Netherlands minister of labor, commerce and industry, at the request of the national committee for combating alcoholism, made an inquiry in all the communes of the country with regard to the results of the restrictions imposed on the dispensing of alcoholic beverages, in accordance with the provisions of the legislation at present in force. The results of this inquiry show for each commune: (1) the days and hours for which the restrictions were imposed; (2) the results of the restrictions; (3) as to whether the restrictions have been abolished, and (4) if so, why? The restrictions were established by the communal authorities only for certain specified days: holidays, fairs, market days, and the like, either for the whole day or for certain hours. The extent of the restrictions varied also according to the localities. On the whole, the effects of the restrictions were found to be favorable. The effects were particularly good when, for example, the restrictions applied to election days, drawings for the conscription, or other similar events. Large centers of population especially have found general advantages in the restrictions. Some communes reported the results as unfavorable. A few communes have abolished the restrictions. The reasons given for the failure and abolition of the restrictions in certain communes are as follows: The means of enforcing the restrictions were inadequate; the restrictions gave rise to clandestine dispensing (bootlegging); the restrictions were not in force at the same time in adjoining communes, which made the securing of beverages an easy matter.

Malaria in Batavia

In a public health bulletin of the Dutch East Indies, Mr. Van Breemen publishes the results of studies carried on since 1923 on malaria, particularly with reference to the prevalence of anopheles and the effects of preventive measures at Andjong-Priok. Following petrolization, the hatching places of Anopheles ludlowi and of Anopheles rossi Giles have almost entirely disappeared from the territory surrounding the port. But the work carried out on the fish-ponds to the east of Kampong Kodja for a distance of about 1,300 meters has not prevented absolutely further invasion of this region, particularly by Anopheles ludlowi, which comes from the ponds farther on. This invasion reaches its height during the season of the east monsoon; but it must be admitted that likewise during the season of the west monsoon the Anopheles density is under the influence of the ponds located more than a kilometer to the east. Nevertheless, the mortality has declined at Kodja, and also the splenic index in children. The author states that the best method of removing the menace of fish-ponds is to place their management and exploitation under the control of the public health service with full authority to act. By including petrolization, and, if need be, the drainage or filling in of less important collections of stagnant water to the south of the area of the fish-ponds, a complete success may be achieved.

Instruction in Therapeutics

J. De Groot discusses in the journal *Geneskundige Gids*, July 31, 1931, the need of extending the opportunities for individual instruction in therapeutics. He holds that instruction in therapeutics should be given by a university professor, assisted by instructors. The professor ought to be able to treat pharmacotherapy and climatotherapy, and to give an outline of therapeutics in general and of the relations existing between the various branches of therapeutics. The instructors should each be able to discuss certain subdivisions and to study them in a practical manner with the students. De Groot assumes that

physicians directed in this manner, though far from considering themselves competent to treat all cases, would be in a better position to recognize the limits of their knowledge and would understand that they should leave cases that are too complicated to their colleagues who have specialized in those fields.

De Groot suggests that the additional expense incurred by this form of instruction be borne by the pharmaceutic industry; that is to say, that all proprietary medicines, whether manufactured in the country or not, be made subject to a 50 per cent tax on the selling price. The sum thus collected might be distributed as follows: (1) increase of the appropriation for the government institutes for instruction in pharmacotherapy up to 50,000 florins ($20,000); (2) creation at each university of a chair of therapeutics; (3) an appropriation for the same purpose at the University of Amsterdam; (4) salaries of employees charged with the control of the sale of proprietary medicines, and (5) aid for the associations that work for the well being and health of the population.

Report Concerning Medical Inspection of Schools

The report of the commission on social hygiene shows the mode of functioning in the Netherlands of the body charged with the medical inspection of schools. The examining physicians do not all work in the same manner throughout the country. Their task is not confined to the regular examination of the school children but extends to an examination of and a report on the buildings that they occupy. The examination is to be made more thorough. The physician must examine the children not only from the physical but also from the mental point of view. Children who appear to require it will have special forms of exercise prescribed. As to the mental examination, the physician will, if need be, request the aid of a psychiatrist. The school physician must likewise watch over the dentition of the school children. The commission considers that school medical inspection is one of the best means of protecting the health of children. The commission has formulated the following conclusions: 1. Organization of medical inspection of schools is indispensable for the whole country. 2. The examination should be made to include the preparatory or lower grades. 3. In case there is evident lack in the health service of a district, medical inspection of schools should be inaugurated, the expense being apportioned to the central government, the province and the commune. 4. It should be the task of the medical inspector of schools to observe, to advise, to supervise and to occupy himself with prophylaxis in general. Treatment should not be instituted by the school physician without the consent of the parents and the family physician. 5. Medical inspectors of schools should be considered as health officials.

Marriages

RALPH J. METCALF, El Dorado, Kan., to Miss Mary Margaret Morgan of Spring Green, Wis., September 19.

CHARLES L. PLUNKETT, New York, to Miss Helen Penelope Flemer of Short Hills, N. J., October 22.

ROBERT BRANNAN DURHAM, Atlantic City, N. J., to Miss Margaret Ollier McClaren, September 19.

LAWRENCE BROOKS MEHL, Columbus, Ohio, to Miss Marjorie J. Yocum of Massillon, recently.

GEORGE L. LEFEVRE, Muskegon, Mich., to Miss Eunice R. Sexton of Cleveland, September 25.

THOMAS MORRIS MARTIN to Miss Catherine E. Lavery, both of St. Louis, September 17.

CHARLES A. RUTHERFORD, Seattle, to Miss Marguerite Dober in Tacoma, recently.

WALTER R. MANZ to Miss Beatrice Hardwigh, both of Eau Clare, Wis., September 26.

ARTHUR G. MILLER, Hobart, Ind., to Miss Helen S. Ayrea, September 21.

Deaths

Charles Francis Stokes ⊕ Medical Director, Captain, U. S. Navy, retired, Miami, Fla.; Medical Department of Columbia College, New York, 1884; entered the U. S. Navy as an assistant surgeon in 1889; was made surgeon in 1900, later medical inspector and medical director; surgeon general and chief of the bureau of medicine and surgery with the rank of rear admiral, 1910-1914; retired in 1917; member of the American College of Surgeons; aged 68; died, October 29, in the U. S. Naval Hospital, Brooklyn, of lobar pneumonia.

Theodore B. Schneideman ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1883; member of the American Academy of Ophthalmology and Oto-Laryngology and the American College of Surgeons; formerly on the staffs of the Wills Eye Hospital and the Polyclinic Hospital; aged 70; died, October 24, in the Lankenau Hospital, of prostatic hypertrophy, with urinary retention and bronchopneumonia.

George Roger Albertson, Vermilion, S. D.; State University of Iowa College of Medicine, Iowa City, 1910; member of the South Dakota State Medical Association; assistant demonstrator of anatomy at his alma mater, 1910-1912; professor of anatomy, University of South Dakota School of Medicine since 1912, and dean since 1926; aged 45; died suddenly, November 3, of angina pectoris.

Victor V. Bacon, Spokane, Wash.; Chicago Homeopathic Medical College, 1887; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member of the city board of health; for eight years member of the board of health of Michigan City, Ind.; aged 68; died, September 17, of hypernephroma of the left kidney with metastasis to the lungs.

Mike Clemont Jenkins ⊕ Pratt, Kan.; Kansas City Hahnemann Medical College, 1911; member of the American Academy of Ophthalmology and Oto-Laryngology; member of the State Board of Medical Registration and Examination; on the staff of the Ninnescah Hospital; aged 45; was killed, November 13, when the automobile in which he was driving was struck by a train.

James J. McGuinn, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society, and the American College of Surgeons; chief of staff of the John B. Murphy Hospital; aged 57; died, October 31, of intestinal obstruction.

George Thomas McKeough, Blenheim, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1877; M.R.C.S., England, 1878, and L.R.C.S., Edinburgh, 1879; member of the American College of Surgeons; surgeon to the Public General and St. Joseph's hospitals, Chatham; aged 75; died, October 1.

Thomas A. Miller, Corsicana, Texas; University of Tennessee Medical Department, Nashville, 1888; member of the State Medical Association of Texas; past president of the Navarro County Medical Society; on the staff of the Navarro County Hospital; aged 66; died, October 12, of cerebral hemorrhage.

Lee Wilson Thomas, Brooklyn; University of Vermont College of Medicine, Burlington, 1908; member of the Medical Society of the State of New York; on the staffs of the Lutheran Hospital and the Kingston Avenue Hospital; aged 45; died, October 25, in the Peck Memorial Hospital, of heart disease.

Charles B. Van Horn, Topeka, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1904; member of the Kansas Medical Society; attending physician to the Kansas Boys Industrial School; aged 59; died, October 16, in the Stormont Hospital, of diabetes mellitus.

Bunyan G. Prestridge, Alvarado, Texas; University of Louisiana Medical Department, New Orleans, 1883; member of the State Medical Association of Texas; aged 73; died, August 5, in a hospital at Fort Worth, of pyonephrosis of the left kidney, hypostatic pneumonia and sepsis.

Thomas W. Basinger, Petersburg, Ind.; Kentucky School of Medicine, Louisville, 1880; member of the Indiana State Medical Association; county health officer; aged 77; died, October 19, in the Good Samaritan Hospital, Vincennes, following an operation for hernia.

John Ernest Rarick ⊕ Wolcottville, Ind.; Fort Wayne College of Medicine, 1905; formerly secretary of the La Grange County Medical Society; aged 50; died, October 28, in the Sacred Heart Hospital, Garrett, of perforation of the sigmoid.

E. T. Arthur Simard, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1890; professor of pathology and clinical surgery at his alma mater; president of the Medical Council of Canada; aged 63; died, September 3, in a local hospital.

William Louis Grimes, San Francisco; Missouri Medical College, St. Louis, 1893; also a pharmacist; formerly on the staff of the Illinois Hospital for the Insane, Jacksonville; aged 70; died, October 14, in Oakland, Calif., of carcinoma of the duodenum.

Clara Shetter Keiser, Reading, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; aged 68; died, October 6, of an injury received in an automobile accident.

James S. Rowe, Jamestown, Ky.; Louisville Medical College, 1893; member of the Kentucky State Medical Association; for fifteen years county health officer; aged 62; died, October 12, of cerebral hemorrhage and chronic nephritis.

Robert Allan Pyne, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1878; sheriff of Toronto; served during the World War; formerly member and chairman of the board of education; aged 77; died suddenly, June 18.

George Edward Josephs, Pembroke, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1881; formerly county coroner and member of the board of education; on the staff of the Cottage Hospital; aged 73; died, May 20.

Paul K. Gaston ✠ Pratt, Kan.; American Medical Missionary College, Chicago, 1903; on the staff of the Ninnescah Hospital; aged 59; was killed, November 13, when the automobile in which he was driving was struck by a train.

Joseph O. Eddy, Friendly, W. Va. (licensed, West Virginia, 1903); member of the West Virginia State Medical Association; aged 49; died, October 27, of chronic endocarditis, aortic insufficiency and mitral insufficiency.

Rob Roy McCully, Cincinnati; Columbia University College of Physicians and Surgeons, New York, 1901; connected with the U. S. Veterans' Bureau; aged 54; was found dead in bed, October 25, of cerebral hemorrhage.

Milton Chauncey Wright, Mount Vision, N. Y.; Medical Department of the University of the City of New York, 1893; aged 70; died, June 25, in Cooperstown, of bronchopneumonia, acute bronchitis and cardiac insufficiency.

Raymond Edgar Trezise, Brooklyn; Long Island College Hospital, Brooklyn, 1920; member of the Medical Society of the State of New York; on the staff of the Bay Ridge Sanitarium; aged 38; died, October 15.

Walter Edson Steffy, Duquesne, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; aged 61; died, August 9, in the McKeesport (Pa.) Hospital, of cardiorenal disease and acute suppurative appendicitis.

William Herrick Newman, Long Beach, Calif.; Rush Medical College, Chicago, 1893; member of the Associated Anesthetists of the United States and Canada; aged 65; died, August 20, of bronchopneumonia.

John Arthur Miller, Detroit; University of Michigan Medical School, Ann Arbor, 1900; member of the Michigan State Medical Society; aged 60; was found dead, October 16, with a self-inflicted bullet wound.

Edwin Gibbons Moore, Elm City, N. C.; University of Maryland School of Medicine, Baltimore, 1883; member of the Medical Society of the State of North Carolina; aged 69; died, October 6, of hemiplegia.

William Wallace MacGregor, Laredo, Texas; Albany Medical College, 1873; College of Physicians and Surgeons in the City of New York, 1877; aged 80; died, October 13, of hypostatic pneumonia.

John McLernon, Philadelphia; Jefferson Medical College of Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; aged 64; was found dead, November 1, of heart disease.

David R. Landsborough, Daggett, Mich.; Trinity Medical College, Toronto, Ont., Canada, 1901; member of the Michigan State Medical Society; aged 59; died, October 28, of cerebral hemorrhage.

Louis Paul Rossier, Garberville, Calif.; University of Vermont College of Medicine, Burlington, 1878; aged 76; died, August 20, of injuries received when he was struck by an automobile.

Robert Hamilton Thornton, Newport, Ky.; Medical College of Ohio, Cincinnati, 1868; Bellevue Hospital Medical College, New York, 1872; aged 84; died, October 11, of pulmonary congestion.

Thomas Bennett Green, New Westminster, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1906; served during the World War; aged 57; died, June 5, of heart disease.

Fred Dunham Pratz ✠ Moweaqua, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 61; died, October 23, of heart disease.

George Horton Perrin ✠ Menomonee Falls, Wis.; Keokuk (Iowa) Medical College, 1892; past president of the Waukesha County Medical Society; aged 67; died, October 15, of acute uremia.

William McLean Rowat, Athelstan, Que., Canada; McGill University Faculty of Medicine, Montreal, 1886; for many years coroner of the district of Beauharnois; aged 71; died, June 18.

George McClellan Jones, Long Beach, Calif.; State University of Iowa College of Medicine, Iowa City, 1886; aged 69; died, August 19, of injuries received in an automobile accident.

Frank E. Seal, Brookville, Ind.; Eclectic Medical Institute, Cincinnati, 1882; member of the Indiana State Medical Association; aged 72; died suddenly, October 20, of heart disease.

Walter Albert Smith ✠ Modesto, Calif.; Keokuk Medical College, College of Physicians and Surgeons, 1908; aged 54; died, October 19, of angina pectoris and acute myocarditis.

David Trumbull Marshall, Hollis, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; aged 65; died, October 9, of a self-inflicted bullet wound.

Clarence James Stewart, Montreal, Que., Canada; McGill University Faculty of Medicine, 1918; on the staff of the Montreal General Hospital; aged 39; died, September 14.

Robert Andrew Lowry, Brooksville, Fla.; University of Louisville (Ky.) School of Medicine, 1875; aged 77; died suddenly, October 13, of acute cardiac dilatation.

Harry Arthur Donovan ✠ East Tallassee, Ala.; University of Louisville (Ky.) School of Medicine, 1907; aged 50; died, October 20, of acute angina pectoris.

Abraham Smith Warder, Jr., Grafton, W. Va.; University of Maryland School of Medicine, Baltimore, 1885; aged 70; died, October 23, of cerebral hemorrhage.

William A. Fahl, Mount Blanchard, Ohio; Eclectic Medical Institute, Cincinnati, 1885; bank president; aged 71; died, October 26, of carcinoma of the face.

Edward L. Parmeter ✠ Albion, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1876; aged 79; died, October 18, of cerebral hemorrhage.

Henry Roman Gozdzicki, Ambridge, Pa.; Jefferson Medical College of Philadelphia, 1919; aged 40; died, June 27, in Wilmington, Del., of pneumonia.

Maurice Eugene Roasberry ✠ New London, Ohio; Cleveland Homeopathic Medical College, 1904; aged 51; died, October 13, of cerebral hemorrhage.

Newton James Rice, Pomona, Calif.; Rush Medical College, Chicago, 1887; aged 71; died, August 14, of coronary thrombosis and arteriosclerosis.

Harry P. Pomerene ✠ Canton, Ohio; Jefferson Medical College of Philadelphia, 1890; aged 65; was found dead in bed, October 26, of heart disease.

Daniel Allan Morrison, Louisburg, N. S., Canada; College of Physicians and Surgeons, Baltimore, 1893; died suddenly, August 29.

John T. Ryan ✠ St. Clair, Pa.; Jefferson Medical College of Philadelphia, 1905; aged 52; died, October 6, of carcinoma of the stomach.

Cassius W. Bailey, Pleasant Plain, Iowa; Keokuk Medical College, 1897; aged 60; died, October 10, of cerebral hemorrhage.

Ezra Johnston Watts, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1886; aged 67; died, August 21.

William Lyman Hume, Leeds Village, Que., Canada; McGill University Faculty of Medicine, Montreal, 1875; died, June 28.

Thomas Harry Ashby, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1878; aged 74; died, September 7.

Western Cass Loomis, Wichita, Kan.; University of Illinois College of Medicine, Chicago, 1910; aged 51; died, October 9.

Joseph Henry Dixon, Holyoke, Mass.; Baltimore Medical College, 1894; aged 59; died, June 2, of heart disease.

Bureau of Investigation

KRUSCHEN SALTS

Another Saline "Obesity Cure"

Kruschen Salts, put on the British market by E. Griffiths Hughes, Ltd., and on the American market by E. Griffiths Hughes, Inc., is a "patent medicine"; that is, a package medicine, secret or semi-secret in composition, sold under a proprietary name, for self-treatment. Kruschen Salts has, for many years, been advertised in the British Isles for "removing Uric Acid from the blood" and as a wonderful producer of vim, vigor and vitality. Practically all of the British advertisements show an old gentleman whose features indicate that he is in the seventies, but whose actions are those of an adolescent. He is the Kruschen "grandpa" who is depicted turning "cart-wheels" with his grandsons and jumping over five-board fences and pianos as a means of expressing what is meant by "That Kruschen Feeling." The recommendation in the British advertising is that Kruschen Salts should be taken daily.

Possibly the advertising in the British Isles has worn thin, or the British public, no more gullible than our own, has awakened to the fact that a few "ha'porth" of epsom salt is just as efficient as the expensive Kruschen Salts. Whatever the reason, Kruschen Salts has come to America. Here, it is an "obesity cure." We read, for instance, in an advertisement

Loses 102 Lbs. of Fat—
Is Mighty Popular Now!
How One Woman Lost
20 Pounds of Fat
Long Island Matron Reduces
from 190 to 126 Pounds
St. Louis Woman Loses
20 Pounds of Fat in 4 Weeks
As Young as the Youngest

in the Chicago *Tribune* of August 9, 1931, that Miss Nellie Simpson of Swissvale, Pa., had lost 102 pounds by the taking of Kruschen Salts; she had previously weighed 219 pounds, according to the story. The Chicago *Herald and Examiner* advertisement of the same date records that Mrs. Mae West of St. Louis, Mo., had disposed of 20 pounds of fat in four weeks by the same route. The exploiters of this "patent medicine" inform the medical profession that Kruschen Salts is "a reducent in exogenous obesity" which is but a high-hat method of saying the same thing that is said more crudely in the newspapers. Queer how we may be impressed by nonsense, if the hokum is put in sufficiently impressive phraseology!

The Bureau of Investigation has received scores of inquiries from both laymen and physicians regarding this preparation. A Rochester (N. Y.) physician writes:

"I have received many inquiries and quite a little literature lately advocating Kruschen Salts for the treatment of obesity. Have you any information regarding the product itself or any reports of its use by the profession? If discussed anywhere in the literature, can you tell me where?"

A Hannibal (Mo.) physician writes:

"Please send me information on Kruschen Salts, made by E. Griffiths Hughes, Inc., Rochester, N. Y."

A layman's letter to the Bureau of the Public Health Service at Washington and relayed by that governmental service to the Bureau of Investigation of the American Medical Association, reads:

"I would sincerely appreciate your advice as to safety in taking Kruschen Salts for the purpose of reducing."

Such letters are merely typical.

Kruschen Salts in the United States comes in two forms—tablets and powder. The label on the tablet package describes the product as "An Agreeable Aperient and Diuretic," and recommends it as "an auxiliary remedy for persons suffering from the pains and aches of Rheumatism, Gout or Lumbago." For laxative purposes, the public is told to take two tablets every morning; those suffering from rheumatism, gout or lumbago are to take from four to six tablets each morning. The circular that comes with the tablet package urges the purchaser to take this saline laxative every morning! "Cultivate the habit—not just take it occasionally." The package of Kruschen Salts in powder form features its alleged obesity-cure properties, and the circular is frankly directed to "the American temperament." Like most "patent medicines" sold for the alleged cure of obesity, it is suggested that the obese purchaser diet and abstain totally from butter, cream, cheese, sugar, candy, pastry, potatoes, olive oil, fats of any meats, bacon and some other foods, and to take but sparingly milk, white bread, macaroni, figs, raisins, etc.

In true "patent medicine" style, the manufacturers make a pretense of telling what is in their product. Both tablet and powder trade packages bear what is described as an "analysis," claiming that Kruschen Salts contains the following ingredients:

Sodium Sulphate (Glauber's Salt)	Potassium Sulphate
Sodium Chloride (Table Salt)	Potassium Chloride
Magnesium Sulphate (Epsom Salt)	Citric Acid

No quantities are given. According to a booklet sent out by the Kruschen Salts people, apparently for physicians, the same lack of information is found, with the additional statement that Kruschen Salts also contains "a very slight trace of potassium iodide." The same booklet, after listing the alleged ingredients (still without any quantities) states:

"This formula represents the residual ingredients of European mineral waters from various spas the waters of which have been taken from time immemorial for cure of various ailments, among them obesity."

This sort of nonsense is sent out to physicians by what the Kruschen concern calls its "Research Department." It would be interesting to have this "Research Department" explain to the medical profession just which European mineral water contains citric acid!

A physician who had seen one of the Kruschen Salts advertisements, addressed to the profession, wrote to E. Griffiths Hughes, Inc., at Rochester, N. Y., stating that he would "be pleased to receive the formula" for Kruschen Salts. In due time a brief note came from the Kruschen Salts concern giving no information whatever regarding the composition of the product, but stating that the company was sending, under separate cover, "a regular package of Kruschen Salts."

The State Pharmaceutic Laboratory of Sweden, in 1924, was reported in *Hygienisk Revy*, March 15, 1924, to have declared that the manufacturer's claims of composition were false and that what Kruschen Salts actually contained was:

"Magnesium Sulphate (Epsom Salt).....	71 per cent
"Sodium Chloride (Common Salt).....	11 per cent
"Potassium Nitrate (Saltpeter).....about	6 per cent
"Citric Acid	9 per cent"

Kruschen Salts, as sold in Germany, is reported on by "Gehe's Codex," Fifth Edition (1929), as follows: "Contains, according to declaration on wrapper, besides water of crystallization magnesium 11.62 per cent, sodium 4.65 per cent, potassium 3.03 per cent, chloride ion 6.64 per cent, sulphate ion 49.96 per cent, iodide ion 0.0007 per cent."

Even if one accepts the manufacturer's claim for composition, it is quite obvious that four ounces of Kruschen Salts, selling for 85 cents, will do nothing that cannot be accomplished equally well with four ounces of epsom salt, selling for less than a dime. It is not necessary to tell physicians that the habit of taking saline laxatives daily, as recommended by the Kruschen Salts concern, is pernicious to a degree. The only way in which Kruschen Salts can reduce weight is by the production of an artificial diarrhea that will move the food through the digestive tract before all of it can be assimilated. As Fantus says in his book, "Useful Cathartics," such a method of treating obesity "is not nearly as rational as diminution in the intake of nutriment."

As cathartics, salines leave much to be desired. In certain forms of constipation, they are directly harmful. Quoting

again from Fantus: "They are contraindicated in chronic atonic constipation, as they not only do not antagonize the underlying pathologic condition, but actually aggravate it by lessening the need for peristaltic activity, as liquid contents are more easily propelled than solid material."

Correspondence

EARLY KNOWLEDGE OF VITAMINS

To the Editor:—It is a well known fact that popular intuition often antedates, by many years, scientific discovery and scientific explanation. Before vitamins were dreamed of, experience had shown the value of lime juice in scurvy and of cod liver oil in rickets.

In some studies on the Florentine guilds, I found that five centuries before Eyckmann demonstrated the significance of accessory food factors the people of Florence had for themselves discovered the value of vegetables in the diet. The humble cabbage was greatly extolled, as were in turn all the vegetable treasures of the garden and the field, as a panacea for all the aches and pains of poor humanity.

But even more indicative of the penetrating power of the common instinct is the following: "It [cabbage] was cooked, and even the water in which it was prepared was deemed a health-giving beverage." This may be looked on as the precursor of the present-day passion for tomato juice and sauerkraut cocktails.

The context and the phraseology used by the writer whom I have quoted, Edgcumbe Staley, show that Staley, who wrote in 1906, thought such practice a foolish superstition. The world at large for centuries seemed to be of the same opinion and, as many housewives do in our own time, cast away with the water in which the vegetables were boiled the mineral salts and some of the vitamins that are the most valuable constituents of these vegetables.

I do not wish to detract from the merit of Eyckmann and his followers, but it must be admitted that they were anticipated five centuries ago by the practical and quick-witted Florentines.

DAVID RIESMAN, M.D., Philadelphia.

ACCUMULATIONS OF LIQUOR AMNII

To the Editor:—In "Queries and Minor Notes" (THE JOURNAL, October 24, p. 1247) under the caption "Unusual Obstetric Condition," Dr. Greer of Oakfield, Tenn., says: "Soon after the birth of the child, the patient began to have pains again. On examination I found the bag of waters protruding; it soon ruptured with a profuse rush of water. The placenta was delivered normally." In the answer the statement is made that the description of the case is not clear and that it is hard to conceive that there existed a large bag of waters with nothing in it except liquor amnii.

I was interested in this case report. Without entering into a polemic, may I cite the fact that it is not unusual for accumulations of liquor amnii to be found limited by portions of the amnion. This condition can be seen by an examination of a series of placentas. However, large accumulations of liquor amnii are rare. Frequently, though, a woman will give the history that the membranes have ruptured, yet the obstetrician during the course of the delivery may rupture the membranes, and considerable liquor amnii may escape.

A case in point: Though the membranes ruptured before the patient entered the hospital, yet later I ruptured the membranes, and about 500 cc. of clear fluid containing a few pieces of floating mucoid substance came away. Still later it was necessary to rupture membranes more resistant than the previous ones, and about 750 cc. of blood-tinged fluid was obtained. Both fluids proved to be liquor amnii. Examination of the placenta showed two distinct, nearly equal cavities limited by amnion, each with its base on the placenta and separated by a common amnion wall, but in the one was the origin of the umbilical cord. When I talked over this specimen with the late Dr. Aldred Scott Warthin, he stated that he had seen a few specimens like this one and that they were of simple amnion formation, not associated with multiple pregnancies. It could be in Dr. Greer's case a simple unruptured amniotic sac whose limiting amniotic membrane had withstood the pressure of labor.

JOHN P. GARDINER, M.D., Toledo, Ohio.

FEVER TREATMENT OF CHOREA

To the Editor:—I was surprised to see an article in THE JOURNAL (August 1, p. 299) proposing the treatment of chorea by the induction of fever. This method of treatment was recommended by Dr. Tibor Kern, years ago (*Wien. klin. Wchnschr.* **36**:164 [March 1] 1923) with the injection of milk and is widely used in the clinics in Budapest with remarkable success.

GÉZA HETÉNYI, M.D., Budapest.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POLIOMYELITIS AND POSSIBLE TRANSMISSION BY MILK

To the Editor:—Can you tell me what is the present belief in regard to the possibility of poliomyelitis being a milk-borne disease? I know of Dr. Aycock's study of the English epidemic, and I believe that two other epidemics, in which milk was supposed to be a factor, were reported in New York State. Have there been any others reported, and are these considered enough to prove that it may be carried by milk?

EMELIE M. PERKINS, M.D., Rutland, Vt.

ANSWER.—The epidemiologic evidence in the three outbreaks referred to is of the same order as that which seems to be accepted as proof of transmission through milk in outbreaks of such diseases as diphtheria and typhoid. Three other groups of cases (Wickmann, 1905, Frost, 1916, and Rosenow, 1930), while not as fully satisfying the criteria for milk-borne outbreaks because of the small number of cases or other circumstances from which other modes of spread could not be definitely excluded, nevertheless suggest transmission through milk. In the more common diseases the existence of numbers of precedent outbreaks make the idea of transmission through milk more readily acceptable in a given instance. However, on the question of probability it should be noted that the frequency of milk-borne poliomyelitis is not of a lower order than in the more common diseases which are sometimes milk borne, when allowance is made for their much greater prevalence. The age, space and time relationships between cases in these outbreaks differ so markedly from those of poliomyelitis in general that there can be no inference that milk plays a part in the general occurrence of the disease. These outbreaks have been interpreted by some as an indication that the pathway of infection in poliomyelitis is gastro-intestinal rather than upper respiratory but such a deduction is, of course, not necessarily any more valid than it would be in the case of diphtheria.

SWIMMING IN CASES OF SEXUAL NEURASTHENIA

To the Editor:—In Queries and Minor Notes (THE JOURNAL, August 15, p. 481) a correspondent wrote to you under the heading of Sexual Neurasthenia. How much value would swimming be in such a condition? The water would be cold enough to cause constriction of the parts affected, without any reaction after leaving the water, at least such is my impression. Please omit name.

M.D., New York.

ANSWER.—No effect, either good or bad, has been noticed from swimming in cases of sexual neurasthenia. In some cases a cold bath has a good tonic effect.

HEMOPTYSIS AND MENSTRUATION

To the Editor:—I have a woman patient, aged 36, who for the last seven years has had hemoptysis associated with menstruation. Will you please suggest some treatment in this case of vicarious menstruation?

IRWIN HOFFMAN, M.D., Chicago.

ANSWER.—Hemoptysis associated with the menstrual periods is not a rare condition in women who have pulmonary tuberculosis. If the hemoptysis occurs at regular monthly intervals and the uterine bleeding is absent, the vicarious menstruation is known as the substitutional type. In these cases the pulmonary hemorrhages apparently replace the uterine flow of blood. If, however, the hemoptysis occurs in association with the menstruation through normal channels it is known as the supplementary type. Women who have pulmonary tuberculosis should of course be treated in the accepted way regardless of whether or not they have vicarious menstruation. With improvement in the tuberculous condition the hemoptysis should cease. If this patient does not have outspoken phthisis, a careful examination should be made to detect a mild form of the disease. Even if no direct evidence is found, some antituberculosis treatment should be instituted in an effort to build up the patient's resistance. There is no specific therapy for vicarious menstruation unless a local cause can be found for the condition. Gland preparations have not proved successful.

HEMOGLOBINOMETER

To the Editor:—What is the most satisfactory hemoglobinometer of the Sahli type manufactured anywhere in the world today? I assume that one with a double colored glass rod would possibly be the most satisfactory, particularly since such standards do not fade. I am interested only in the product of some company that furnishes a statement as to the number of grams of hemoglobin per hundred cubic centimeters of blood on which the manufacture of the colored glass rod standards is based. The whole field of hemoglobin determination has been in such a weird, chaotic state for so many years that one has a great deal of difficulty in obtaining a satisfactory standard. Where there is so much difference in opinion as to the number of grams per hundred cubic centimeters which constitutes the normal, there will probably be, as there is now, a great deal of discussion as to what the normal standard for instruments should be. At any rate, I need a simple, accurate little instrument of this type and I hope that some manufacturer has decided to make a high type instrument with a nonfading glass standard adjusted to somewhere near the present accepted normal of grams of hemoglobin per hundred cubic centimeters of blood. Please omit name.

M.D., Indiana.

ANSWER.—As is well known, the major difficulty with the Sahli hemometer lies in the fact that the standard which Sahli decided should be a 1 per cent solution of blood in tenth normal hydrochloric acid fades rapidly, in effect causing higher hemoglobin readings than actually exist. In addition to this it seems obvious that Sahli, in basing his standard of 100 per cent on 17.2 Gm. of hemoglobin per hundred cubic centimeters, used an extremely high normal. In order to obviate the fading of the standard, many solutions have been designed. The Kuttner-Leitz Sahli instrument employs two cylinders of colored glass. Those who have examined this standard, however, find that the color does not correspond to that which is developed by the addition of blood to diluted hydrochloric acid. Thro states that a standard made of oxalated blood, hydrochloric acid and glycerin is semipermanent if kept in dark brown bottles.

Haskins (*J. Biol. Chem.* **57**:111 [Aug.] 1923) has prepared a standard made of inorganic salts which he asserts will last indefinitely. His modified apparatus and standard can be purchased from Hynson, Westcott and Dunning, Baltimore. With Osgood he has extended his observations, supported by critical and scientific work, and at the present it is likely that, if one is not going to make his own standard, this apparatus is the most accurate modified Sahli that has been put on the market.

The difficulty with colored glasses is to get them with the right shade. Even if a manufacturer should be lucky enough to obtain a batch of glass of the correct shade it would be difficult, if not impossible, to reproduce the exact color and hence it is unlikely that a standard of nonfading glass which will be satisfactory will soon be developed. Newcomer's disks are considered satisfactory by many, but the principle of his test is different from that used by Sahli.

There is considerable divergence of opinion as to what constitutes normal hemoglobin values. Such values have been offered which range all the way from 13 to 18 Gm. per hundred cubic centimeters. Williamson and others have shown that the normal values of hemoglobin must be corrected for age and sex, and Lippincott and others have shown that it must also be corrected for geographic location.

Boerner (*Am. J. Clin. Path.* **1**:391, 1931) has recently advised the more general use of normal ranges. He gives for males a range of from 14 to 18 Gm. and for females from 12 to 15.5 Gm.

If the determination of hemoglobin is always made in terms of grams per hundred cubic centimeters, rather than in percentage, it will clarify the situation a great deal. Reporting in percentages is confusing unless the physician has clearly in mind a standard value which is based on an experience in which he has correlated age, sex and geographic location.

Every one will be glad to see the development of an instrument answering the requirements outlined by the correspondent, but no instrument can be made to correlate and think for the physician.

TOXIC EFFECTS OF SHOEMAKER'S CEMENT

To the Editor:—At the present time we have a patient here at the hospital with a severe anemia. Careful history shows that anemia was probably caused by benzene poisoning. The patient is a shoemaker and for the past three months has been using a cement substance to glue on soles of shoes. The symptoms of the present illness began at that time and gradually became worse. The name of the cement is "Celoflex" and is manufactured by the Flexment Corporation, Muskegon, Mich. Could you tell us the constituents of this cement and a possible aid for the correct diagnosis?

HARRY ASHMAN, M.D., Baltimore.

ANSWER.—This question was referred to a consultant, who stated that the manufacturers of "Celoflex" were invited to supply information as to benzene (benzol) as an ingredient in this product. They have replied that no benzene or naphtha is employed as a solvent.

In going over the formulas for leather cements it is noted that benzene is a commonly recommended constituent. It is possible that a container labeled "Celoflex" might have in fact contained some other cement.

A sample obtained directly from the manufacturers gave off an odor strongly suggestive of methyl alcohol. On testing by Haley's test for methanol (methyl alcohol), positive reactions were obtained. Haley's test is, however, not specific for methyl alcohol. The application of Schiff's reagent to "Celoflex" established the presence of aldehydes. Distillation of this cement led to the passing over of some liquid near the boiling point of methyl alcohol. It seems likely that this substance is present in the cement. As methyl alcohol may be toxic from entry into the body by inhalation, or through the skin (or combined), this substance should be considered in relation to the clinical state found.

E. B. Starr has discussed poisoning from work with cements (Poisoning by Benzol Carbon Tetrachloride Cement, with Special Reference to the Early Symptoms of Benzol Poisoning, *J. Indust. Hyg.* **4**:203 [Sept.] 1922).

Other toxic substances that have been found in widely used cements are carbon tetrachloride, carbon bisulphide, propyl and kindred alcohols, and acetates.

TRAUMA AND MENINGITIS

To the Editor:—I had a patient who died of meningococcus meningitis. The family states that he fell and hurt his head two days before he was taken sick. There was no external evidence of injury and the blow was evidently not severe. The patient was insured and the policy pays double indemnity for death due to accident. Can you advise me whether the blow could have predisposed to meningitis? Can you refer me to literature on the subject, especially court rulings? Please omit name.

M.D., New Jersey.

ANSWER.—While it cannot be denied categorically that the blow may have favored in some way the development of the meningitis, it is obvious that the blow cannot be held responsible for the meningococcic infection, which is the essential factor in the case. The blow is to be regarded as a coincidence. So far as now known there are no court rulings bearing directly on this case.

TREATMENT OF PROSTATITIS AND VESICULITIS

To the Editor:—I have a patient, a man, aged 34, in excellent physical condition. He has been married six years. He and his wife have been to many good gynecologists and genito-urinary men to see why they have no children. The wife has been assured she is all right. Her husband, two years ago, had from 60 to 70 pus cells to the high power dry field in the prostatic smear. After a year of marriage this cleared up, and for one year he has had only 5 to 7 cells. His spermatozoic activity still remains low. He has very few spermatozoa (1 to four or five microscopic fields) and these are dead after thirty minutes at body temperature. The venereal history is negative. Is there any known therapy of recognized value to increase spermatozoic activity in such a case? Would the presence of a varicocele have any inhibitory effect on spermatozoic activity and growth? Please omit name.

M.D., California.

ANSWER.—The appearance of pus cells points to a persistent prostatitis and vesiculitis. It will be necessary first to clear up these conditions. For this purpose systematic massage of the

prostate and the seminal vesicles may be employed with the intradermal injection of some protein. In order to improve the circulation, medical diathermy should be applied to the prostate, vesicles and testicles. The amount of current is determined by the patient's sensation. The patient should report the feeling of warmth only and not of heat. An effect of diathermic treatments may be expected only if these treatments are administered frequently and if each treatment extends over a period of at least thirty minutes. The occasional low tolerance of the rectum for the prostatic electrode rises with each successive application. Quite often repeated injections of compounds derived from the anterior lobe of the pituitary body are helpful. The prognosis in instances of this character is always doubtful.

COMPLICATION OF CHOLECYSTOSTOMY

To the Editor:—A woman was operated on, July 18, for gallstones. Cholecystostomy was performed, as the condition of the patient did not warrant cholecystectomy. Bile drainage from the sinus was profuse for about two weeks, when it subsided and the sinus apparently healed; but a week later it opened again (preceded by pain resembling gallstone colic for about twenty-four hours). The sinus discharged bile for four or five days and then healed again, having been repeatedly packed in the upper third in an endeavor to have it heal from the bottom. A few days after it was closed, the attack of pain recurred and the sinus opened for the second time. It has since closed again and opened for the third time. The common duct is unobstructed, as the color of the feces has always been normal. Four small stones were removed from the gallbladder. The cystic duct is patent as the bile enters the gallbladder, but, after the sinus closes, contractions apparently force bile through the granulations and open the sinus instead of expelling it through the cystic duct. Is it considered likely that the sinus will close after opening three times since operation (July 18), or is it more likely that a second operation will be required? Can you suggest anything in connection with this case? Kindly omit name. M.D., South Carolina.

ANSWER.—Whenever a gallbladder fistula following cholecystectomy fails to heal within a reasonable length of time, or alternately heals and breaks down, accompanied by colic, it is a foregone conclusion that the cystic duct or neck of the gallbladder is blocked by stone or stricture. In this case, since bile appears in the gallbladder, this block is incomplete. An overlooked stone is the most common cause of this condition, and, as the skin fistula closes, the stone is forced into the duct, making stenosis complete. Repeated packing does more harm than good, because this is a fistula, not a sinus. It may be wise to look for a small sponge. It is unlikely that anything short of a cholecystectomy will effect a cure. This could probably be done with no more risk than a secondary exploration of the cystic duct.

PREOPERATIVE USE OF PARATHYROID EXTRACT TO CONTROL HEMORRHAGE

To the Editor:—My attention has recently been called to the fact that a surgeon is using injections of parathyroid extract-Collip as a routine prior to prostatectomy with the purpose of preventing postoperative hemorrhage. I should appreciate it if you would inform me whether there is any scientific basis for this routine use of parathyroid extract, and, if so, whether its use prior to other operations, such as tonsillectomy, is justified as a routine measure? Kindly omit name. M.D., Alabama.

ANSWER.—There is at present no scientific basis for the preoperative use of parathyroid extract. However, it is reported clinically that parathyroid extract in a majority of cases controls hemorrhage from various causes (THE JOURNAL, April 23, 1927, p. 1301). Bleeding time and clotting time appear to be definitely shortened in the menses by its use (*Am. J. Obst. & Gynec.* **13**:156 [Feb.] 1927).

Whether or not postoperative hemorrhage can be controlled by the use of parathyroid extract is a problem of interest in the light of theories of coagulation and is one which might well be the object of scientific research.

X-RAYS IN PARONYCHIA

To the Editor:—In my cases of paronychia I have been using roentgen treatment with apparently good results. Will you please let me know whether the x-rays are a recognized treatment for this condition? I have had this treatment questioned in a case coming under the compensation insurance act and would appreciate your opinion. I should also like to know whether the x-rays are of any value in other types of infection following wounds of the finger.

H. A. GALLUP, M.D., San Luis Obispo, Calif.

ANSWER.—MacKee states that he has had a few good results and many failures with the x-rays in the treatment of chronic pyogenic paronychia. X-rays should not be used as a routine in infections following wounds of the finger.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Clinical.* Chicago, Dec. 29. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Boston, Dec. 21. Sec., Dr. Wm. H. Wilder, 122 S. Michigan Blvd., Chicago.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. B. M. Berger, 12 North Central Ave., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

DELAWARE: *Regular and Homeopathic.* Wilmington, Dec. 8-10. Sec., Dr. Harold Springer, 1013 Washington St., Wilmington.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 29-30. Sec., Dr. W. C. Fowler, District Building, Washington.

KANSAS: Kansas City, Dec. 8-9. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 1-3. Sec., Dr. A. T. McCormack, 532 West Main St., Louisville.

LOUISIANA: New Orleans, Dec. 10-12. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Regular.* Baltimore, Dec. 8-11. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Dec. 17-18. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 5-6. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 7. Sec., Dr. John W. MacConnell, Davidson.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 8-10. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

OREGON: Portland, Jan. 5-7. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland.

RHODE ISLAND: Providence, Jan. 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Dec. 18-19. Sec., Dr. Alfred B. DeLoach, Medical Arts Bldg., Memphis.

UTAH: Salt Lake City, Dec. 1-2. Dir., Mr. S. W. Golding, 412 State Capitol Building, Salt Lake City.

VIRGINIA: Richmond, Dec. 8. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 West Wisconsin Ave., Milwaukee.

Iowa June Report

Mr. H. W. Grefe, director, Examinations and Licenses of the Iowa State Department of Health, reports the written examination held at Iowa City, June 2-4, 1931. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety-eight candidates were examined, 97 of whom passed and one failed. The following colleges were represented:

College	FAILED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1930)*	84.5
Rush Medical College		(1931)	81.5
State University of Iowa College of Medicine		(1930)*	90, (1931)* 79.4, 82.3, 82.8, 82.9, 83, 83.1, 83.3, 83.8, 83.8, 84.1, 84.6, 84.6, 84.8, 84.9, 85, 85.4, 85.4, 85.6, 85.8, 85.9, 86.1, 86.3, 86.4, 86.4, 86.4, 86.4, 86.5, 86.8, 86.8, 86.8, 86.9, 87, 87, 87.3, 87.5, 87.6, 87.6, 87.6, 87.8, 87.8, 87.9, 88, 88, 88.3, 88.3, 88.4, 88.4, 88.4, 88.5, 88.5, 88.6, 88.8, 88.9, 89, 89.1, 89.3, 89.3, 89.4, 89.4, 89.5, 89.6, 89.8, 89.9, 89.9, 89.9, 90, 90, 90, 90.1, 90.1, 90.1, 90.4, 90.8, 90.8, 90.9, 90.9, 90.9, 91.3, 91.5, 91.6, 91.8, 91.8, 92, 92.3, 92.4, 92.5, 93.1, 93.3, 93.9
University of Minnesota Medical School		(1931)	86.1
St. Louis University School of Medicine		(1926)	81.5
Creighton University School of Medicine		(1930)	83.9
University and Bellevue Hospital Medical College		(1925)	88.6
University of Vienna Faculty of Medicine		(1930)†	81.1

College	FAILED	Year Grad.	Per Cent
Moscow State University Faculty of Medicine		(1916)†	65

Mr. Grefe also reports 15 physicians licensed by reciprocity with other states, and one physician licensed by endorsement from Feb. 11 to Aug. 10, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Med. and Surg. (Physio-Medical), Chicago		(1902)	Penna.
Rush Medical College		(1931)	Illinois
University of Kansas School of Medicine		(1927)	Kansas
Kentucky University Medical Department		(1904)	Louisiana
Louisville Medical College		(1907)	New Mexico
Tulane University of Louisiana School of Medicine		(1927)	Louisiana
Washington University School of Medicine		(1929), (1930)	Missouri
Creighton University School of Med.		(1927), (1928), (1930) (1930)	Nebraska, Kansas

College		Year Grad.	Endorsement of
University of Nebraska College of Medicine		(1930, 2)	Nebraska
Jefferson Medical College of Philadelphia		(1928)	Illinois
	LICENSED BY ENDORSEMENT		
University of Edinburgh Faculty of Medicine		(1928)	N. B. M. Ex.

* Licenses withheld pending completion of internship.
† Verification of graduation in process.

South Carolina June Report

Dr. A. Earle Boozer, secretary, South Carolina State Board of Medical Examiners, reports the written examination held at Columbia, June 23-25, 1931. The examination covered 17 subjects and included 75 questions. An average of 75 per cent was required to pass. Forty-five candidates were examined, all of whom passed. Three physicians were licensed by reciprocity with other states, and two physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University School of Medicine		(1929)	80.4
Jefferson Medical College of Philadelphia		(1924) (1929) 83.9, (1930) 87.4	76.3,
Medical College of the State of South Carolina		(1931) 77.6, 80.3, 80.6, 81, 81.1, 81.5, 81.5, 81.8, 82.5, 82.9, 83.3, 83.3, 83.4, 83.5, 83.6, 83.9, 84.1, 84.3, 84.5, 84.5, 84.8, 84.9, 85, 85.5, 85.9, 86.1, 86.6, 87, 87.3, 87.4, 87.4, 87.6, 88, 88.6, 89.1, 89.4, 89.6, 90.3, 90.9	
Meharry Medical College		(1930) 84.1, (1931)	76.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine		(1926)	Louisiana
University of Maryland School of Medicine		(1903)	N. Carolina
Jefferson Medical College of Philadelphia		(1924)	N. Carolina

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Johns Hopkins University School of Medicine		(1927)	N. B. M. Ex.
Columbia University College of Phys. and Surgs.		(1929)	N. B. M. Ex.

Book Notices

Approved Laboratory Technic: Clinical, Pathological, Bacteriological, Serological, Biochemical, Histological. Prepared under the Auspices of the American Society of Clinical Pathologists by John A. Kolmer, M.D., Dr.P.H., D.Sc., Professor of Pathology and Bacteriology, Graduate School of Medicine, University of Pennsylvania, and Fred Boerner, V.M.D., Associate Professor of Bacteriology, Graduate School of Medicine, University of Pennsylvania. Assisted by C. Zent Garber, A.B., M.D., Associate in Pathology, Peking Union Medical College, and Committees of the American Society of Clinical Pathologists. Cloth. Price, $7.50. Pp. 663, with 311 illustrations. New York and London: D. Appleton & Company, 1931.

While many books on laboratory diagnosis have been written during the past year, this book serves a most useful purpose in the field. It is a manual written with the specific purpose of establishing standards for the performance of various laboratory examinations. The text was prepared under the auspices of the American Society of Clinical Pathologists, which has approved of the technic of the methods given. The authors, however, have assumed responsibility for the recommendations of the methods for the diagnosis of disease. When possible, they have selected one method by which accurate results can be obtained. The facts are presented in a simple, direct manner, with enough detail to insure accurate work even in the hands of inexperienced laboratory workers. This is further facilitated by adequate illustration of the text. The authors have emphasized the importance of using reliable apparatus and reagents as a further means of insuring accuracy. Especial consideration has been given to quantitative tests and reactions, since they make for greater accuracy and tend to standardize the reporting of results. When qualitative tests are given, a uniform terminology is suggested. The book in its entire organization is a working manual written expressly for the technician and those interested in laboratory work. Some of the unique features are chapters on methods for housing, feeding, inoculating, bleeding and performing necropsy on animals; methods of colorimetry, nephelometry and scopometry, and methods for the diagnosis of early pregnancy (Aschheim-Zondek and Friedman tests). The authors have included methods for securing specimens of blood, spinal fluid, gastric contents and bile for examination, since there has been an increasing tendency on the part of the physician to have laboratories take over this work. The book fulfils the purpose expressed by the authors and is a valuable addition to the field of clinical pathology. Laboratory standardization and accuracy are especially important when so much of the work is done outside the direct supervision of the physician.

Schmerzverhütung. Zwölf Vorlesungen. Von Dr. Fritz Starlinger, Assistent an der Klinik Eiselsberg und Privatdozent für Chirurgie an der Universität Wien. Paper. Price, 6.60 marks. Pp. 105. Vienna: Julius Springer, 1931.

The twelve discussions are designed mainly for the use of medical students, but they are well worthy of the attention of any one who must use anesthetics in therapeutics, especially those who are not specialists in this field; and even the anesthetist will find valuable suggestions. The first three chapters deal with the minutiae of the objects of general anesthesia, with methods of administration and the general principles of the subject, together with the theory of the action of anesthetics; the fourth is devoted to ether narcosis; the fifth to anesthesia with chloroform, ethyl chloride and solesthin; the sixth to avertin, somnifen, numal and pernocton; the seventh to nitrous oxide, ethylene and narcylen; the eighth considers combination narcosis, the theory and method; the ninth and tenth consider local anesthetics; the eleventh is devoted to considerations determining the choice of anesthetic; the twelfth considers a number of questions partly philosophical, partly the treatment of pain of different types.

Little need be said concerning the first three chapters, except that one is impressed with the earnest desire of the author to convince the student and those who administer anesthesia that it is a serious undertaking and that one must be strongly imbued with a sense of responsibility when one administers a general anesthetic to a patient, since one must then take the life of another in one's keeping. He says that the failure to observe even one of the essential details may cost the patient his life. Again and again he returns to the idea that the safety of the patient must be kept constantly in mind and that one must never fall into a routine, regardless of the conditions. He especially enjoins systematic study of the patient's condition, his idiosyncrasies, and his reactions to various drugs. In other words, an understanding of the patient, such as the old-time family physician was supposed to acquire with long acquaintance. One who reads these three chapters carefully can hardly fail to be impressed with the difference between the point of view expressed and that of many who have vociferously advocated one or another of the methods of anesthesia recently introduced, and which the author condemns inferentially even more strongly than he does directly. The burden of the argument is unending care of the patient, of personal observation, leaving nothing to chance that can be controlled.

The methods of administration enumerated by the author are inhalation, rectal, intravenous, intramuscular, subcutaneous and intraperitoneal. He lays great stress on the fact that inhalation anesthesia consists in the administration of an extraordinary number of extremely small fractional doses, whereby the greatest measure of control is possible. In contrast to this is the subcutaneous injection, after which there is no control. He says that with this there is not a trace of individualization. He admits that it has the wonderful advantage of simplicity, since one merely injects a few cubic centimeters and lets nature take its course. The same applies in a lesser degree to intravenous injection.

Those who have been taught by recent literature to consider the administration of an anesthetic as a small matter requiring little study will be inclined to consider the intensive study recommended by Starlinger as a counsel of perfection, but certainly no one who follows his instructions rigidly will ever have occasion to blame himself for a death during anesthesia. His reiteration of the necessity of the careful selection of the anesthetic for the individual is in sharp contrast to the literature of the many specialties that have recently appeared and that of enthusiasts who have been attracted by the convenience of many of these recent additions to the anesthetic materia medica. Concerning ether, Starlinger takes the attitude of the majority of the more conservative anesthetists and surgeons. The details of administration are discussed at length. His views concerning chloroform run rather to the other extreme, and while few will maintain that chloroform should be used as a routine, many will disagree with his statement that chloroform narcosis is only

of historical interest. He says that, while he has administered anesthetics during the war and since then, he has used chloroform anesthesia alone scarcely ten times in his life. He is opposed to full narcosis with avertin because of the lack of control. He takes a much more favorable attitude toward its use for basic narcosis. He declines to commit himself concerning the number of deaths caused by avertin, and maintains that one must distinguish sharply between deaths that occur with full narcosis and those in which a more conservative attitude is maintained.

It may seem strange to the reader that much can be added to the general knowledge of the use of the anesthetics. Probably no method at present in vogue involves a death rate of more than one in one thousand in the hands of a reasonably skilled anesthetist, and when death has occurred it is often difficult, or impossible, to determine whether it resulted from the anesthetic or from unavoidable conditions; hence it is not easy to make an exact comparison of the relative safety of two methods of inducing anesthesia. This small volume is recommended to the conscientious student and to the physician who is not a trained anesthetist but who must occasionally administer an anesthetic, provided they are willing to take infinite pains in mastering this subject. It is not recommended to those who are not willing to take such pains, for it will only convince them of their unfitness to perform the duties which they assume.

Nutrition and Physical Fitness. By L. Jean Bogert, Ph.D., Instructor in Experimental Medicine, Yale University. Cloth. Price, $3. Pp. 554, with 65 illustrations. Philadelphia: W. B. Saunders Company, 1931.

Dr. Bogert has incorporated into one book a multitude of associated facts collected from the fields of home economics, nutrition, physiology, chemistry and medicine. Considering her ambitious aim and the wide scope of the material, she has produced an excellent volume. It should make its appeal to the intelligent layman, as it presents in simple nontechnical language the related facts of these sciences. The subjects covered include the classification of foodstuffs, the nutritional requirements of the body and how they are best met by proper food consumption, the normal processes of the body, and perhaps of greatest help to the housewife, the practical dietetics of meal planning. In these chapters the author has supplemented the text with numerous well organized meal planning charts and outlines. In view of their clarity and adapability, they will greatly assist the reader to use his knowledge in the routine of daily life in exercising "common sense dietary control." Dr. Bogert has avoided giving any radical or biased advice and has exposed to ridicule the fallacies of the food faddist. Her attitude is that of the practical scientist attempting to show how the facts of science may serve as tools for building optimal health. The concluding chapters on senescence, overweight and diet in disease are also free from the fads so commonly found in books giving advice to the layman.

Scharlach: Ätiologie, antitoxische Serumtherapie und Schutzimpfung. Von Prof. R. Kraus, Generaldirektor des staatl. Gesundheitsamtes von Chile. Unter Mitarbeit von Dr. G. Morawetz, Primarius am Franz Josef-Spital in Wien, Dr. J. Zikowsky, Assistent am Franz Josef-Spital in Wien, und Dr. J. Teichmann, Assistent am staatl. Serotherapeutischen Institut in Wien. Paper. Price, 45 marks. Pp. 365, with illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1931.

The purposes of this monograph as stated in the preface are to recommend use of the name Moser-Dick serum instead of Dochez-Dick serum to designate scarlet fever antitoxin, and to orient the physician with regard to recent developments in scarlet fever. The reasons advanced in support of the name Moser-Dick serum are that Moser was the first to attempt to produce a serum specific for scarlet fever and that the Dicks discovered scarlet fever antitoxin and developed a successful method for producing it. American readers who are accustomed to use the serum under its scientific descriptive name, Scarlet Fever Antitoxin, will not understand Kraus's insistence on the hyphenated historical name unless they know of his long association with the State Serum Institute in Vienna, where Moser produced his antistreptococcus serum twenty years ago, when Kraus was an assistant in the institute, of which he later became director. The failure of Moser's serum is attributed to Moser's inability to determine the etiology of scarlet fever, all his inoculations of animals having resulted negatively, and to his ignorance of the existence of scarlet fever toxin and scarlet fever antitoxin, so that attempts to test the specificity and potency of his serum were limited to determining its antibacterial action. The author subscribes to the Dick theory of the etiology and mechanism of scarlet fever as a disease caused by a specific hemolytic streptococcus, which produces a soluble toxin, which in turn is employed for the production and standardization of scarlet fever antitoxin. The proved value of scarlet fever antitoxin as a specific serum therapy in scarlet fever is emphasized. The chapters on the Dick test and active immunization with the toxin are less convincing. The author questions the meaning of the Dick test but fails to describe the technic employed in producing the toxin or the technic used in making and observing the skin tests on which his conclusions are based. On the whole, Kraus places himself in the questionable position occupied by many European scientists who accept the specificity and efficacy of scarlet fever antitoxin but waver in regard to the specificity of the toxin with which the specific antitoxin is produced.

The Practical Treatment of Diabetes. By T. Izod Bennett, M.D., F.R.C.P., Physician with Charge of Outpatients, Middlesex Hospital. Cloth. Price, $2. Pp. 107. New York: Richard R. Smith, Inc., 1931.

The discussion opens with a brief summary of the clinical manifestations, including the more common laboratory procedures, in diabetes mellitus. The basic principles in treatment are then outlined and their practical application is described in some detail. The advantage of several smaller meals over fewer larger ones as a preventive against glycosuria is pointed out. Diet is discussed along broad lines, and several specimen menus are suggested. The author properly points out that patients are more likely to follow diets constructed in accordance with the foregoing principles than those calculated with mathematical exactness. The administration of insulin is described, as are the indications for its use. The more important complications and their management are briefly discussed. On the whole, the subject is well presented in the few pages which constitute this little book and there are many practical points which can be of help to the general practitioner. It is doubtful, however, whether the treatment of diabetes mellitus can be so briefly presented without the omission of some essential information in the actual management of the disease.

Experiments on Vitamin A Deficiency in Rats and the Quantitative Determination of Vitamin A. By Skúli V. Gudjónsson. Paper. Pp. 189, with 72 illustrations. Copenhagen: Levin & Munksgaard, 1930.

The busy clinician who expects to find in this monograph information dealing with the sources of vitamin A and their relative potencies will be disappointed. However, there is presented an excellent discussion of the pathology of vitamin A deficiency in the rat, the animal most commonly employed for such studies. The monograph deals with the finer details of the biologic technic for measuring this dietary essential, though, curiously enough, specific directions for calculating the relative potencies of substances tested are lacking. The many factors that have a bearing on the biologic method of assay of vitamin A are discussed and the extreme care required in carrying out the details of the assay as well as the interpretation of results is emphasized. While most of the points stressed in the book are commonly included in the practice of vitamin assay in this country, in several instances the experiences of Dr. Gudjónsson seem exceptional. The book is translated from the Danish and provides a worth-while summary of certain important technical aspects of the study of vitamin A.

Physical Requirements for Commercial Flyers. By John S. Chase, A.B., M.D., Flight Surgeon, U. S. Army, and Nolie Mumey, A.M., M.D., Flight Surgeon 120th Observation Squadron, 45th Division, Lowry Field. Paper. Pp. 31, with illustrations. Denver: Clason Publishing Company, 1931.

This little manual, apparently privately published, contains about 3,000 words. It is so simple that it hardly merits the classification of a manual. The book of requirements of the medical branch of the department of aeronautics of the government lists in a detailed manner the actual physical requirements demanded from pilots. These instructions are available to any one who asks for them, without cost, except postage. Hence this booklet may be considered an unnecessary contribution to medical literature.

Les accidents nerveux consécutifs aux pertes de sang: Étude clinique et expérimentale. Par Robert Worms. Préface du Dr. P. Abrami. Paper. Price, 32 francs. Pp. 207, with illustrations. Paris: Gaston Doin & Cie, 1931.

This book deals with nervous manifestations ascribed to loss of blood. The following seven posthemorrhagic symptoms and syndromes are treated, each with personal case records and bibliography: hemiplegia; paraplegia; convulsions; larval pyramidal syndromes; psychic phenomena; coma with hypertonia; ocular and cranial nerve phenomena. The results of experiments on many varieties of animals are related. Finally, there is a chapter on pathogenesis and therapeutic deductions. It is emphasized that certain local preexisting lesions, especially of the brain and liver, predispose to the occurrence of nervous phenomena which rarely occur if the organs are normal. The effect of transfusion shows that these phenomena are to a great extent reversible.

Pathology, Bacteriology and Applied Immunology for Nurses. By Robert A. Kilduffe, A.B., A.M., M.D., Director, Laboratories, Atlantic City Hospital. Cloth. Price, $2.50. Pp. 324, with 112 illustrations. Milwaukee: Bruce Publishing Company, 1931.

In this book the author presents only such pathologic, bacteriologic and immunologic material as will be of value to nurses, and omits the large volume of technical facts useful only to those engaged in specialized work in these fields. Teachers of classes of nurses will find this book of great value as an outline for their lectures. Nurses will be able to use the book for study during their courses, and afterward as a reference book. It is divided into three large parts, as the name implies, and in each division the practical facts from the nurses' point of view are presented. Of particular value is the chapter on applied sanitation, which outlines the organisms causing the various common diseases, their portal of entry and mode of exit from the body, and the prophylactic measures necessary to check their spread. Another valuable chapter, from the point of view of the laboratory, gives in detail the procedures for collecting and transporting specimens to the laboratory. On the whole, this is a concise and practical textbook for use in nurses' training schools.

Die Röntgendiagnostik des Verdauungskanals: Einschliesslich der Leber und der Gallenwege. Von Privatdozent Dr. H. U. Albrecht, Oberarzt an der medizinischen Universitätsklinik, Frankfurt a. M. Mit einem Geleitwort von Professor F. Volhard. Paper. Price, 56 marks, Pp. 493, with 828 illustrations. Leipzig: Georg Thieme, 1931.

This work is written in a rather simple German style. Each section is furnished with an extensive bibliography. The technic is given somewhat briefly, as the work deals largely with diagnosis, as mentioned in the title. The esophagus is well taken care of along with the other parts of the gastro-intestinal tract. An interesting part of this section on the gullet is that portion dealing with diaphragmatic hernia and its differentiation from diverticulosis. The anatomy and physiology of each portion of the gastro-intestinal tract are taken up in the proper section. A number of helpful diagrams are furnished throughout the work. Whenever possible, a photograph of the operative postmortem specimen is given along with the roentgen observations. The illustrations, which are numerous, are excellent halftones, representing chiefly x-ray films. No mention is made of duodenitis. This is an excellent book.

A Textbook of Exodontia: Exodontia, Oral Surgery and Anesthesia. By Leo Winter, D.D.S., Professor of Oral Surgery and Director of the Oral and Minor Surgery Clinic, New York University College of Dentistry. Second edition. Cloth. Price, $10. Pp. 455, with 428 illustrations. St. Louis: C. V. Mosby Company, 1931.

In this edition the author has incorporated all the important results of recent studies in the field of general and local anesthesia. He gives a detailed description of the various local anesthetics together with their physiologic action, method of preparation and injection, and the after-effects. The book deals largely with clinical work. Excellently executed drawings from life, showing the position of the patient and the operator, for every type of exodontia, will be of great value both to the student and to the general practitioner. Those who desire a more detailed description of the pathology and technic for the removal of impacted mandibular third molars may consult the same author's book on "Impacted Third Mandibular Molars." This volume is a practical manual on exodontia, and does not include the pathology and treatment of the diseases of the mouth, except for one chapter on cysts of the jaws. The book is well printed. The illustrative matter is excellent.

Die Lungensyphilis des Erwachsenen. Von Dr. L. Dünner, ärztlicher Direktor, Dr. F. Leeser, Röntgenologe, und Dr. H. Blume, Assistenzarzt am städtischen Hospital Buch-West in Berlin. No. 41. Tuberkulose-Bibliothek. Beihefte zur Zeitschrift für Tuberkulose. Herausgegeben von Prof. Dr. Lydia Rabinowitsch. Paper. Price, 6 marks. Pp. 52, with 37 illustrations. Leipzig: Johann Ambrosius Barth, 1931.

In this booklet the authors review the diagnosis, pathologic changes and roentgen observations in pulmonary syphilis. They report twelve cases of their own, with excellent roentgenograms of the lungs. The diagnosis of pulmonary syphilis is difficult and can be confirmed only by the postmortem demonstration of the interstitial or gummatous lesions. Even the pathologist must be careful about making the diagnosis. There is no definite symptom complex for pulmonary syphilis, with its variety of forms. The disease may closely simulate other chronic diseases, such as tuberculosis, actinomycosis, bronchiectasis, lymphogranuloma, and carcinoma of a bronchus. The great uncertainty and difficulty in the diagnosis of pulmonary syphilis, both clinically as well as post mortem, justify one in being skeptical about many of the cases of tertiary pulmonary syphilis reported in the literature. Clinically, pulmonary syphilis is not to be diagnosed with certainty. The cases in which a cure has been effected do not come to necropsy; the far advanced cases may no longer react to antisyphilitic therapy. The following points are of diagnostic value: the absence of tubercle bacilli in the sputum; the localization of the process in the middle or the lower portion of the lung, especially in the right lung; the presence of other syphilitic lesions or a positive Wassermann reaction, and the effect of antisyphilitic therapy. The booklet is a valuable addition to knowledge of pulmonary syphilis, especially because it emphasizes the difficulties of diagnosis.

Chemistry and Cookery: Some Theories of Chemistry, and Applications to Cookery Processes. By Annie Louise MacLeod, Ph.D., Dean of the Colege of Home Economics, Syracuse University, and Edith H. Nason, Ph.D., Professor of Foods, Syracuse University. Cloth. Price, $3.50. Pp. 545, with 25 illustrations. New York: McGraw-Hill Book Company, Inc., 1930.

Here is a course in general chemistry and cookery presented for the college student of home economics. The elements of chemistry and cookery are closely associated to develop the habit of seeking a scientific explanation for the observations of everyday life. The electronic theory of matter and chemical reactions is simply defined and applied, which is an agreeable surprise in a beginners' textbook. The first thirty-one chapters are devoted essentially to chemistry and physical chemistry, and give a good general understanding of these two branches of science. The last fourteen chapters cover cookery and related home economics, food chemistry and nutrition subjects. A laboratory manual supplement is appended. Appropriate question lists are given with each chapter. The entire book is interesting, an excellent example of modern teaching methods.

Gastric Acidity: An Historical and Experimental Study. By John Douglas Robertson, M.D., Assistant Chemical Pathologist to the Middlesex Hospital, London. Boards. Price, 5/-. Pp. 76. London: John Murray, 1931.

This monograph presents the historical development of methods of gastric analysis and the controversy over the type of acid found in gastric contents. The discussion then turns to the occurrence of lactic acid in the gastric contents of normal and carcinomatous stomachs. The assertion is made, and supported by experimental proof, that "lactic acid is usually present in carcinoma of the stomach, but it must also be realized that this is not an early sign." The references are complete.

Prevention of Premature Senility. By Victor G. Vecki, M.D. Boards. Price $1. Pp. 127. Boston: Stratford Company, 1931.

The author gives a cumulative survey of all the hygienic and dietetic measures that may be employed to avoid premature senility with especial reference to the genital functions of the male. Unfortunately he differs with the majority of other authors, apparently strongly believing in the efficacy of the so-called rejuvenating operations, such as severing of the spermatic cord and the transplantation of animal gonads.

Medicolegal

Trauma and Tuberculous Meningitis

(Brim v. Home Acc. Ins. Co. (La.), 131 So. 762)

On account of the death of her son, alleged to have been caused by an accident occurring in the course of his employment, the plaintiff sued the Home Accident Insurance Company, which had underwritten the liability of his employer under the Louisiana workmen's compensation act. The trial court gave judgment in favor of the insurer, and the plaintiff appealed to the court of appeal of Louisiana, Orleans.

Ryan, the son, fell from a ladder, Oct. 15, 1928. So far as the evidence shows, he was in good health before the accident. Immediately after it he appeared to be very much dazed and at first was unable to express himself clearly and was bleeding from a wound over his left eye. He was taken to a hospital, where the wound was sutured. He refused to remain there, but he was subsequently treated by two physicians acting on behalf of his employer. Nov. 22, 1928, they discharged him as cured. Later, complaining of weak and dizzy spells, he consulted another physician, by whom he was treated until Dec. 31, 1928, when he was discharged. He appears to have grown progressively worse after the accident. So far as is known, Ryan consulted no physician between Dec. 13, 1928, and the date of his death, March 10, 1929, about five months after the accident, when he was found dead in his room. The coroner performed an autopsy and certified on the basis of a "gross examination" that the cause of death was as follows:

> Cerebella abscess with necrosis of the left hemisphere. Multiple areas of necrosis on surface of cerebrum; and calloso marginal fissure of each lateral hemisphere. Sub-aracnoid general congestion with oedema of brain. Smear negative for bacteria.

A microscopic examination of a section of the cerebellum was made by an expert pathologist, who reported that the cause of death was tuberculous meningitis, or multiple tuberculomas. The plaintiff, the mother of the dead workman, contended that the fall activated a dormant tuberculosis and hastened her son's death, thus entitling his dependents to recover compensation under the workmen's compensation act. The defendant insurance company, however, contended that death was due to internal causes and that the fall had nothing to do with it.

The medical witnesses agreed that a tuberculoma of the brain is the result of secondary infection, the primary infection being elsewhere in the body. Dr. Johns, testifying for the plaintiff, expressed the opinion that the impact on the head when the workman fell damaged the tissue within the skull and made it more susceptible to tuberculous infection than normal tissue is. He regarded the accident as a contributing cause of death. The reports of the coroner, who performed the autopsy, and of the pathologist who made the microscopic examination showed that there was an abscess "in the back of the skull." The location of the abscess, Dr. Johns explained, was not inconsistent with its having resulted from the impact of the fall on the frontal region, since "traumatic injury to the frontal portion of the brain is more likely to produce hemorrhage on the opposite side than in the immediate vicinity of the blow." The postmortem examination disclosed no evidence of hemorrhage, and this, it was claimed, precluded the idea of any serious trauma within the skull. With respect to this, however, Dr. Johns testified, and his testimony was not controverted by other medical testimony, that after five months, the period that elapsed between the accident and death, "the encroachment of the abscess would have liquefied the blood, transformed it all into exudate, so that it would not be recognizable as blood." On behalf of the insurer it was contended that the fact that five months elapsed between the time of the fall and the time of death weakened the plaintiff's contention that the accident was a contributing cause. But, Dr. Johns testified, "it would be compatible with the usual history of brain abscesses for a man to live that long with tubercular abscess."

The pathologist who made the microscopic examination and the physician who last treated the injured workman supported the insurer's contention that trauma had nothing to do with causing death, but neither of them would say that trauma could not have been a factor in producing that result. The pathologist admitted that necrosis due to trauma differs only minutely from a similar condition due solely to bacterial action. The physician who last treated the deceased expressed the opinion that the tuberculomas of the brain would have caused death eventually independent of the accident, but admitted that theoretically, if tuberculous infection was present in the brain, trauma would activate its destructive process so as to cause earlier death.

In summing up the case, the court quoted from *Behan* v. *John B. Honor Co.*, 143 La. 348, 78 So. 589, as follows:

> The proof goes no further, in support of the defense of this suit, than to show that the plaintiff might, and perhaps would, at some time, have become disabled by the disease that was lurking in his system, even if the accident complained of had not happened. And that is not much more of a defense than to say that every man must some day come to the end of his worldly career, accident or no accident.

In *Fraze* v. *McClelland Co.*, 200 Iowa 944, 205 N. W. 737, it was held that proof of absence of illness prior to injury and rapid development of tuberculosis thereafter, together with medical testimony to the effect that tuberculosis might be accelerated by traumatic causes, was sufficient to support a finding that tuberculosis was caused by the trauma. In *Schlenker* v. *Garford Motor Truck Co.*, 183 App. Div. 166, 170 N. Y. S. 439, 441, it was held that medical testimony to the effect that a trauma "of the kind which the employee received could excite a dormant tuberculosis condition into activity and accelerate death," in the absence of evidence to the contrary, was sufficient to support a recovery, notwithstanding evidence to the effect that no traumatic conditions prevailed at the time of the death of the employee three weeks after the accident.

The court of appeal therefore reversed the judgment of the trial court in favor of the insurer and ordered judgment be given in favor of the mother of the deceased workman.

Insurance: Representations as to Prior Health.—The insured, when she made application for insurance, was asked to name all diseases or injuries for which she had consulted a physician within five years. The answer to this question, written by the insurer's agent, was "None." The evidence showed, however, that this was not the answer given by the insured, but that both she and her husband told the agent that she had been injured in lifting a piano, a hemorrhage following the strain. Moreover, the insurer's physician testified that she told him that "she had not been treated for anything that amounted to anything, nothing worth mentioning." Such a statement was sufficient to put the physician on notice that the insured had "ailments." If the company wanted to know, or if the physician wanted to know, what those ailments were, inquiry should have been made of the insured. The insurer's physician testified also that the insured was apparently "the perfection of health" when he examined her. All the proof shows, said the Supreme Court of Arkansas, that there was no intentional false statement. The physician who made the examination and the agent were in possession of facts from which they could have learned, if they had made inquiry, everything that after the death of the insured they complained they did not know. The judgment of the trial court against the insurer and in favor of the beneficiary under the policy was affirmed.—*The Maccabees v. Gann (Ark.), 34 S. W. (2d) 456.*

Society Proceedings

COMING MEETINGS

Association of American Medical Colleges, New Orleans, November 30-December 2. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, New Orleans, November 30-December 2. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Philippine Islands Medical Association, Manila, December 15-18. Dr. A. S. Fernando, 817 Taft Avenue, Manila, Secretary.

Radiological Society of North America, St. Louis, November 30-December 4. Dr. I. S. Trostler, 25 East Washington Street, Chicago, Secretary.

Society of American Bacteriologists, Baltimore, December 28-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., December 8-11. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Western Surgical Association, Denver, December 4-5. Dr. Frank R. Teachenor, 306 East Twelfth Street, Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Surgery, New York

14: 1-383 (Oct.) 1931

A Report of Vascular Lesions Which Illustrate Some of the Fundamental Principles That Have Been Taught and Emphasized by Professor Rudolph Matas. M. R. Reid, Cincinnati.—p. 17.
Experimental and Clinical Basis for Arterectomy in Treatment of Localized Arterial Obliterations. R. Leriche, Strasbourg, France.—p. 55.
Raynaud's Disease and Thrombo-Angiitic Gangrene of Upper Extremities Treated by Resection of Sympathetic Ganglions and Trunk. R. Alessandri, Rome.—p. 68.
Personal Experience in Vascular Surgery. H. A. Royster, Raleigh, N. C.—p. 79.
Halsted Thirty-Six Years Ago. J. C. Bloodgood, Baltimore.—p. 89.
Hypertrophic Tuberculosis of Ileum with Multiple Lesions. J. M. T. Finney and J. M. T. Finney, Jr., Baltimore.—p. 149.
Cancer of Rectum and Rectosigmoid. R. C. Coffey, Portland, Ore.—p. 161.
Intestinal Obstruction from Congenital Deformity of Small Intestine. E. Ribas y Ribas, Barcelona.—p. 215.
Cancer in North American Negro. F. L. Hoffman, Newark, N. J.—p. 229.
Cancer of Stomach with Especial Reference to Its Incidence, Diagnosis and Treatment. J. S. Horsley, Richmond, Va.—p. 264.
Cancer of Breast. J. B. Deaver, Philadelphia.—p. 276.
Anesthesia. G. W. Crile, Cleveland.—p. 288.
Total Rhinoplasty. P. Moure, Paris.—p. 298.
Fistulas Following Marsupialization of Hydatid Cysts: Their Radiographic Examination. J. Trias-Pujol, Barcelona.—p. 313.
Place of Senses in Development of Science. W. J. Mayo, Rochester, Minn.—p. 329.
Splenectomy: Its Indications and Technic. D. P. D. Wilkie, Edinburgh.—p. 340.
Operative Treatment of Phthisis: The Surgeon's Moral Obligation. H. Lilienthal, New York.—p. 356.
Observations on Reaction of Bronchial Fistulas to Acute Infections of Upper Respiratory Tract. E. A. Graham, St. Louis.—p. 382.

Annals of Internal Medicine, Ann Arbor, Mich.

5: 247-400 (Sept.) 1931

*Observations on Rheumatic Pancarditis and Infective Endocarditis. W. S. Thayer, Baltimore.—p. 247.
*A Theory of Causation of Cardiac Pain. A. Lambert, New York.—p. 256.
*Insulin Coefficient, an Improved Method for Clinical Control of Diabetes Mellitus. J. R. Williams, Rochester, N. Y.—p. 264.
Effect of Ingestion of Burdock Root on Normal and Diabetic Individuals. A. A. Silver and J. C. Krantz, Jr., Baltimore.—p. 274.
Diabetes in Negro Race. E. J. Leopold, Baltimore.—p. 285.
Syphilitic Aortitis in Retrospect. W. S. Middleton, Madison, Wis.—p. 294.
Bronchomoniliasis: Clinical and Pathologic Study with Report of Illustrative Cases. O. S. Warr, Memphis, Tenn.—p. 307.
Postvaccination Encephalitis. C. Armstrong, Washington, D. C.—p. 333.
Clinical Aspects of Portal Cirrhosis. A. M. Snell, Rochester, Minn.—p. 338.
Hereditary Ectodermal Dysplasia of Anhidrotic Type. W. H. Fordon and R. C. Jamieson, Detroit.—p. 358.
Application of Modified Psychiatric Approach in Treatment of Certain Gastro-Intestinal Disorders. T. H. Morrison and S. Morrison, Baltimore.—p. 371.
Prestige of the Internist. M. J. Breuer, Lincoln, Neb.—p. 381.

Rheumatic Pancarditis and Infective Endocarditis.—Thayer calls attention to the fact that in two respects subacute and chronic vegetative endocarditis and subacute rheumatic heart disease are similar; namely, (1) the distribution of the lesions, commonest on mitral and aortic valves, and (2) the common subacute course. But whereas in rheumatic fever the intoxication as a rule is not very great, the anemia not very pronounced, and embolic phenomena are absent, in infective endocarditis, general constitutional symptoms, fatigue, anorexia and progressive anemia are striking and embolic phenomena are common. Osler's phenomena in the fingers and toes are almost pathognomonic. Nephritis, rare in rheumatic heart disease, generally appears in infective endocarditis. Splenic enlargement is rare in the former, the rule in the latter. Cultures from the blood are usually sterile in rheumatic heart disease, generally positive in infective endocarditis. The distinction between infective and rheumatic endocarditis though usually easy, may be difficult. One should not forget that it may be a delicate question which, like all other clinical problems, can rarely be settled by the laboratory alone. It is well to remember that in subacute rheumatic heart disease mural thrombi may form without auricular fibrillation, giving rise to peripheral emboli highly suggestive of vegetative endocarditis; that nonhemolytic streptococci may occasionally be obtained from the blood during acute rheumatic carditis, and, now and then, on several occasions; that a diagnosis on the one hand of rheumatic carditis or on the other hand of infective endocarditis cannot be made without a careful consideration of all the evidence; that a fatal prognosis in the absence of immediately threatening symptoms need never be made in either condition.

Causation of Cardiac Pain.—According to Lambert, as the myocardium degenerates there is an increasing dyspnea on exertion, and there finally comes a time when the degenerated myocardium cannot contract with adequate vigor to drive on the increasing blood coming into the heart from exertion. The myocardial muscles stretch to increase the output per beat but cannot contract with sufficient vigor to accomplish it. For a while an increased heart rate per minute may act as a substitute for increased output per beat, but there comes a time when the lack of output per beat ceases to stimulate the reflex to cause increased coronary flow, and the heart is in the condition of dependence for its coronary flow on increase of blood pressure. The degenerated muscle cannot contract vigorously enough to empty out the heart or clean out its own coronaries. With the incompetent cardiac muscle there occurs an increasing vascular congestion and, finally, dilatation of the coronary arteries, by which stretching of the adventitia is produced from overdistention of the diseased arteries, and pain is the result. This pain arises from stimulation of the afferent nerve endings in the adventitia of the coronary arteries, and the pain persists until the coronary circulation can recover itself through increased muscular action of the myocardium, or diminished inflow of blood into the heart brings relief. When the pain arises from the first portion of the aorta, the mechanism of its causation is different. With an aortitis and diseased aortic wall, or with inflammatory processes around the vasa vasorum of the adventitia which press on the sensory nerve endings, any sudden increase of blood pressure in the aorta which some emotion may cause; which any sudden demand for increased cardiac action will produce, will cause an increased stretching of the aortic adventitia sufficient to produce pain but not sufficient to cause reflex action of the depressor nerve to occur and, by lowering of blood pressure, bring about a cessation of the stretching of the adventitia. The giving of nitrites instantly produces a general fall of pressure, a general relaxation of the vascular muscularis, and the painful stretching ceases. The action of the nitrites is substituted for that of the depressor nerve. It seems, judging from the evidence of experimental work, that cardiac pain arises in the ancient mechanism of the autonomic system originating in the sensory nerve endings of the cardiac vascular system, and in the wall of the adjacent aorta. This pain occurs when there is an abnormal distention of the adventitial coats of the aorta and coronaries, through the breakdown of reflex mechanisms to which the degenerated tissues of the aorta and myocardium are unable to respond effectively.

Insulin Coefficient.—Williams states that in the treatment of diabetes the coefficient method is particularly valuable. The clinician has one guiding rule. He first determines how much insulin the patient can make in twenty-four hours by a careful dietary and urine study covering several days. This becomes the patient's coefficient. If this is low, insulin therapy becomes necessary. The dosage is determined by repeated tests involving the factors of time and quantity of insulin to obtain the highest degree of dextrose utilization. The constant endeavor is to raise the coefficient, for by so doing the most effective combination of diet and hormone action is secured. In these studies it may be discovered that the patient will do best with a different arrangement of diet or insulin dosage than has been employed. Sometimes three or four small doses properly spaced

are much more effective than the same number of large doses. Reactions are a sure sign of wasted insulin. In this method the blood sugar becomes a guide to insulin dosage and not to total metabolism. A quantity of insulin which produces an abnormally low blood sugar two or three hours later is partly wasted. The patient should be kept in that state of balance which will enable him to utilize to the fullest extent the insulin that he produces himself. The body weight is an important factor in the arrangement of the diet. If the patient is undernourished, the diet should be modified accordingly, the constant aim being to keep the patient practically urine sugar free, with a maximum insulin coefficient and the body weight properly controlled. The method permits the epicurean patient to indulge himself with safety. The pseudoscientific food and drug fads that have grown up around diabetes can well be forgotten. It is not claimed that the method is infallible. There are other factors than insulin involved in the diabetic process. In the metabolism of profound coma, insulin often fails to work or acts feebly. Often in the severe diabetes of childhood insulin response is not in accord with the one to four ratio but the method is just as useful a guide to helpful therapy as if it were. The insulin coefficient offers a valuable control to clinical research on diabetes, which must be done on the human being. There are many unsolved problems. For the great majority of cases, however, both for diagnosis and for treatment, it is by far the best method with which the author has worked.

Archives of Internal Medicine, Chicago

48: 351-536 (Sept.) 1931

*Exophthalmic Goiter: Development of Refractoriness to Iodine. W. O. Thompson and Phebe K. Thompson, Chicago.—p. 351.

*Congestive Heart Failure: X. Measurement of Ventilation as Test of Cardiac Function. T. R. Harrison, F. C. Turley, E. Jones and J. A. Calhoun, Nashville, Tenn.—p. 377.

*The Staff Count: Its Importance in Acute Infectious Disease. A. Weiss, New York.—p. 399.

*Unexplained Gastric Anacidity. W. S. Polland and A. L. Bloomfield, San Francisco.—p. 413.

Metabolism in Pneumonia: II. The Mechanism of Retention of Chloride in Pneumonia. I. Greenwald, New York.—p. 418.

Id. III. Excretion of Anions and of Total Base in Pneumonia. I. Greenwald, New York.—p. 440.

*Significance of Cerebrospinal Fluid Sugar. E. F. Wahl, Thomasville, Ga.—p. 446.

Native Complement in Hyperthyroidism. N. Novick, Washington, D. C. —p. 462.

*Respiratory Quotient: Its Use in Diagnosis of Diabetes Mellitus. M. Wishnofsky and C. S. Byron, Brooklyn.—p. 470.

*Significance of Potassium-Calcium Ratio and of Inorganic Phosphorus and Cholesterol of Blood Serum in Arterial Hypertension. A. A. Weinstein and Soma Weiss, Boston.—p. 478.

Thrombo-Angiitis Obliterans (Buerger): VI. Chemistry of Blood. Mae Friedlander and S. Silbert, New York.—p. 500.

Cutaneous Lesions Associated with Deficiency in Vitamin A in Man. C. N. Frazier and C. Hu, Peiping, China.—p. 507.

Calcium and Phosphorus Metabolism in Case of Nontropical Sprue with Associated Tetany. A. Marble and W. Bauer, Boston.—p. 515.

Exophthalmic Goiter.—The Thompsons report that during the prolonged continuous administration of iodine one patient with exophthalmic goiter, after showing a remission, became completely refractory to 6 mg. of iodine daily, a dose that was at other times sufficient to produce a maximum reduction in the basal metabolism. Four other patients became at least partially refractory to iodine during its prolonged administration in doses of from 6 to 250 mg. daily. In four of the preceding five cases, iodine was omitted and the refractoriness disappeared. The fifth patient was operated on when the metabolism was rising rapidly during the continuous administration of iodine, and he died about forty hours afterward from a typical postoperative crisis. This reaction was indistinguishable from those previously seen in patients who were operated on without receiving iodine. The exact length of time necessary for the refractoriness to disappear completely when iodine is omitted is unknown; it was observed to do so within twenty-four days. When the metabolism reached its highest point during the administration of iodine, the disease was more severe than it had previously been, and all the peculiar nervous manifestations not only were present but were more intense. In two patients, exophthalmos was first noted as the rate of metabolism was rising during the continuous administration of small doses of iodine, and in the other two it became more marked under these circumstances. The reactions appear to be more characteristic of severe cases than of mild cases. The authors' observations do not appear to support the hypothesis that the peculiar nervous manifestations of exophthalmic goiter are always under control as long as an excess of iodine is being administered. In severe cases, operation should be performed as soon as a maximum reduction in the rate of basal metabolism occurs. In any case, when the metabolism has increased markedly during the administration of iodine, it is probably wise to postpone operation until after this medication has been omitted for from three to four weeks, with the patient at rest in bed, to allow the refractoriness to disappear, and until the administration of iodine has been resumed.

Congestive Heart Failure.—Harrison and his associates present data from which it seems clear that when there is no obstruction to breathing, subjective respiratory distress (dyspnea) on exertion is dependent on three factors. These are (1) the volume of the ventilation, (2) the vital capacity, and (3) the sensitiveness of the psyche. The third factor is unimportant except in neurotic persons. It is evident that one feels short of breath when one's breathing is greater than a certain fraction of one's maximum ventilation. The actual dyspnea is dependent not only on the presence or absence of disease of the various organs concerned in internal and external respiration but also on the nutritional status. By means of appropriate correction, however, it is possible to eliminate more or less from consideration differences in nutrition and to obtain figures that are somewhat proportional to the degree of functional alteration of the heart or other portions of the respiratory-circulatory apparatus. However, it should be noted that the actual distress and the actual respiratory measurements were the same in obese persons with normal hearts as in subjects with early cardiac disease and normal nutritional status. This fact indicates the great importance of reducing the weight of obese patients with cardiac conditions. The authors believe that the ventilation index affords a fairly accurate objective answer to the question "How short of breath are you?" For this reason it seems a better guide to cardiac function than other tests that have been devised. It seems probable that the test will be of some value in measuring the effect of various therapeutic measures, such as the administration of digitalis, in patients with different types of cardiac disease in various stages of development. The question arises as to whether, aside from research, the measure is of practical value. The experience with the test is not yet sufficiently broad to allow any certain answer to this question. The observations that have been reported for patients with cardiac neurosis and for those with very early cardiac disease suggest that the method may be of some diagnostic as well as prognostic value.

Staff Count.—Weiss emphasizes the fact that for those who employ the staff count method of morphologic examination of the blood it is extremely important to bear in mind that a single report of a high staff count does not spell a fatal prognosis. Daily morphologic examinations of the cell are of inestimable importance, for it is on the curve that the prognosis of the case depends. It must be remembered that the changes in the blood are always to be considered conjointly with the complete clinical signs. It is also advisable to bear in mind that outstanding changes in the blood cannot be disregarded because of the lack of clinical corroboration. Nevertheless, it is also true that a definite clinical picture cannot be negated by a lack of confirmatory hematologic observations. Last, but not least, it must always be employed as a means of diagnosis. Although one usually finds a definite biologic chain of leukocytic interaction in infections, every now and then, owing to some unrecognizable cause, the blood picture fails to indicate the patient's condition. One must not forget that even now the reason for the appearance of the various cells in the circulation is not known, and therefore no cause can be ascribed for their failure to appear. These hematologic failures must not serve to discourage the clinician or the laboratory worker but should spur him on to deeper and more exact observations. Careful serial morphologic examinations in which use is made of the neutrophilic subclasses are of inestimable value in the hematologic study of all infectious diseases.

Gastric Anacidity.—According to Polland and Bloomfield, failure to secrete acid (or indeed any actual gastric juice) occurs in a certain number of persons, apart from the well

known associations of anacidity, such as pernicious anemia and cancer of the stomach. It may be estimated that such "unexplained anacidities" are encountered in from 3 to 5 per cent of the patients in a medical clinic. In the authors' series the disorder was distinctly one of middle and old age, a finding which suggests that it is acquired rather than congenital, but beyond this no relation was found to age, sex, occupation, diet or habits. It was not possible to define any symptom complex that is clearly associated with the gastric disorder. This point deserves especial emphasis in view of alleged "anacidity diarrheas" and other syndromes that have been described from time to time. In the authors' series, most of the cases were asymptomatic as far as the gastro-intestinal tract was concerned; in the few cases in which digestive symptoms occurred, they did not present specific features. In only one instance was there evidence that the administration of hydrochloric acid may have had some beneficial effect. As yet it is not known what is the underlying lesion responsible for the disorder of secretion and what is the effect of the presence of complete anacidity on ultimate general health. A further question of especial importance is whether anacidity of this sort is followed in a large percentage of cases by the development of cancer of the stomach. With these problems in mind, an "anacidity clinic" has been started. The patients are seen periodically; they are interviewed and examined, and roentgenograms and gastric analyses are made repeatedly. If any of the patients die, it is hoped that pathologic examination will be possible. At any rate a further report is planned after a sufficient interval, probably five or ten years, has elapsed.

Spinal Fluid Sugar.—Wahl made 201 readings on both the blood and the spinal fluid of 145 patients. Forty-two readings in twenty cases of encephalitis gave an average of 87 mg. for the sugar in the spinal fluid and 112 mg. for the sugar in the blood with a ratio of 77 per cent. It is interesting to note that thirty-two readings on ten patients with acute encephalitis gave exactly the same averages as did the readings on the entire group of patients with encephalitis. In one instance, the amount of sugar in the spinal fluid was higher than the amount of sugar in the blood. This occurred in a white boy, aged 9, when the acute symptoms were beginning to subside. Fourteen patients with syphilis showed an average of 79 mg. of sugar in the spinal fluid and of 106 mg. of sugar in the blood, with a ratio of 74 per cent. Thirty-three patients with miscellaneous neurologic lesions showed an average of 84 mg. of sugar in the spinal fluid and an average of 111 mg. of sugar in the blood, with a ratio of 75 per cent. The highest reading for sugar in the spinal fluid in this group was 100 mg. and occurred in a patient with paramyoclonus multiplex. This represented a ratio of 90 per cent. Thirty-nine readings were made on twelve patients with meningitis. The average amount of sugar in the spinal fluid for the group as a whole was 36 mg. and the average amount of sugar in the blood was 105 mg., giving a ratio of 34 per cent. Of this group, eight patients had tuberculous meningitis, and the average quantity of sugar in the spinal fluid in these eight patients was 27 mg., which represented a ratio of 26 per cent. The remaining four cases are somewhat misleading, as some of them were not followed long enough to determine the effect of prolonged infection. The average amount of sugar in the spinal fluid in these four cases was 74 mg., which was 68 per cent of the average amount of sugar in the blood. The tendency of the sugar in the spinal fluid to decrease in tuberculous and purulent meningitis corresponds to the observations of other investigators. The observations in multiple sclerosis and combined sclerosis are not of diagnostic significance. Five patients with diabetes mellitus showed the effect of a high content of sugar in the blood on the sugar in the spinal fluid. However, the relationship of the sugar in the blood and the sugar in the spinal fluid remained within normal limits. The sugar in the spinal fluid of ten patients with nervous and mental disorders showed a slightly higher average than in many of the groups, being 88 mg. and representing a ratio of 79 per cent. Six patients with epilepsy also showed a tendency to high values, with an average of 88 mg. of sugar in the spinal fluid and a ratio of 79 per cent. Increased intracranial pressure as a cause of high values for sugar in the spinal fluid is not supported by the data on thirteen patients with tumor of the brain. The average amount of sugar in the spinal fluid was 84 mg. and the average amount in the blood was 111 mg. The highest individual reading for sugar in the spinal fluid was 100 mg., but this was only 76 per cent of the amount of sugar in the blood. Nineteen patients presenting no neurologic condition gave an average of 89 mg. of sugar in the spinal fluid and a ratio of 76 per cent. The author calls attention to the fact that the ratio of the sugar in the spinal fluid to the sugar in the blood in his series of cases is higher than most of the values previously recorded. Similar results were obtained by different methods of titration. On the basis of his observations he concludes that: 1. A high reading for sugar in the spinal fluid is not in itself diagnostic of any given disease. 2. In tuberculous and purulent meningitis, the sugar in the spinal fluid decreases as the disease progresses. 3. Determination of the sugar in the spinal fluid aids in the differential diagnosis of some neurologic conditions that may have similar clinical pictures, such as epidemic encephalitis and meningitis.

Respiratory Quotient.—Wishnofsky and Byron consider the disturbance in the metabolism of carbohydrates in diabetes mellitus from three standpoints: the determination of the presence of glycosuria, changes in the concentration of sugar in the blood, and changes in the respiratory quotient. The renal threshold for dextrose varies from 45 to 348 mg. per hundred cubic centimeters of blood. Glycosuria occurs in persons with a low renal threshold who are not diabetic. A diabetic person with a high threshold may have transient glycosuria or none. A high level of sugar in the blood during fasting, and especially a high blood sugar curve after the ingestion of dextrose, may occur in conditions other than diabetes, such as hypertension, nephritis and hyperthyroidism. From the scientific standpoint, the presence of glycosuria and hyperglycemia is inadequate for the diagnosis of diabetes mellitus. A respiratory quotient curve that rises to 0.88 after the ingestion of an adequate amount of dextrose is indicative of a normal secretion of insulin; a low respiratory quotient curve, with certain exceptions, indicates a diminution in the secretion of insulin, or a neutralization or inactivation of an adequate supply. In a study of both the blood sugar and the respiratory quotient curves after the ingestion of dextrose in two cases of hyperthyroidism and two of hypertension, it was demonstrated that the ultimate criterion in the diagnosis of diabetes mellitus is the respiratory quotient curve.

Arterial Hypertension.—Weinstein and Weiss present a study of the significance of the potassium-calcium ratio and the inorganic phosphorus and cholesterol of the blood serum in seventy-five cases of hypertension and twenty-five control cases. The average potassium level rose from 20 to 22.15 mg. per hundred cubic centimeters of serum in seventy-five cases of hypertension with or without secondary complications. This rise was most marked in cases of hypertension with cardiac involvement, in which the average level was 22.8 mg. per hundred cubic centimeters. The average calcium level in seventy-five cases of hypertension with and without complications was normal (9.75 mg. per hundred cubic centimeters) as compared with that of the control group (9.8 mg. per hundred cubic centimeters). The correctness of the observations on the normal amount of calcium in arterial hypertension was supported by the fact that the inorganic phosphorus level in these seventy-five cases (4.1 mg. per hundred cubic centimeters) did not show any tendency to increase above the average amount of inorganic phosphorus in the controls (4.3 mg. per cent), while the calcium-inorganic phosphorus ratio of the seventy-five cases of hypertension (2.43) did not show any tendency to fall below that of the control cases (2.33). The potassium-calcium ratio rose from a control level of 2.05 in twenty-five control cases to 2.32 in seventy-five cases of hypertension with or without involvements. This rise was most marked in patients with hypertension and cardiac involvement (2.38) and least in patients with uninvolved hypertension (2.19). The slight increase observed in the potassium level and in the potassium-calcium ratio observed in the cases of hypertension was probably due to impairment of the circulatory functions. The cholesterol level rose from a control level of 171.6 to 204.5 mg. per hundred cubic centimeters in seventy-five cases of hypertension with or without involvements. This rise was

most marked in patients with hypertension and renal involvement (227 mg. per hundred cubic centimeters) and least in patients with hypertension and cardiac involvement (194 mg. per hundred cubic centimeters). Of thirty-seven cases of uninvolved hypertension, only five (13 mg. per hundred cubic centimeters) showed an unexplainable hypercholesteremia. There was no relation between the potassium-calcium ratio and the cholesterol content of the blood in hypertension. The authors believe that neither changes in the potassium-calcium ratio nor hypercholesteremia can be considered as playing a fundamental rôle in the development of arterial hypertension. Elevation of the potassium and cholesterol levels observed in one group of patients with hypertension was the result rather than the cause of changes in the cardiovascular system.

Arkansas Medical Society Journal, Little Rock

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Report of Case of Electrical Burn Opening Left Chest Cavity. H. A. Higgins, Little Rock.—p. 83.
Postoperative Sequela. A. G. Harrison, Searcy.—p. 84.
Surgeon's Problem in Gas Gangrene. L. V. Parmley, Little Rock.—p. 87.

California and Western Medicine, San Francisco

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Poliomyelitis Problem—From Point of View of Its Epidemiology. W. L. Aycock, Boston.—p. 249.
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Anesthesia—A Medical Specialty. W. W. Hutchinson, Los Angeles. —p. 271.
Postural Tensions for Normal and Abnormal Human Behavior: Their Significance: Part II. E. J. Kempf, New York.—p. 272.
Mental Hygiene Survey of California: Part II. F. H. Allen, Philadelphia, and G. Myers, Los Angeles.—p. 275.
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Therapeutic Irradiation of Ovaries. A. C. Siefert, Oakland.—p. 290.
Present Duration of Breast Feeding: Report of One Thousand American Well Babies. E. J. Lamb, Santa Barbara.—p. 297.
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Journal of Allergy, St. Louis

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*Investigations of Mechanism of Passive Transfer of Skin Sensitization. F. E. Becker and W. C. Black, Denver.—p. 405.
*Fever by Diathermy in Treatment of Allergic Disease. S. M. Feinberg, S. L. Osborne and M. L. Afremow, Chicago.—p. 414.
Effects of Fever, Either Accidentally Incurred or Artificially Produced, in Bronchial Asthma. S. S. Leopold and S. G. Stewart, Philadelphia. —p. 425.
Hyperthermia Induced by High Frequency Electric Current in Treatment of Intractable Asthma. H. Miller and G. Piness, Los Angeles. —p. 436.
A Study of Reactions in Nonsensitive Skin of Mixtures in Vitro of Reagin and Atopen. F. L. Foran and M. R. Lichtenstein, Chicago. —p. 444.
Effect of Allergy on Allergen Absorption Following Parenteral Injections. M. B. Cohen, E. E. Ecker and J. A. Rudolph, Cleveland.—p. 453.
Economic Results from Treatment of Pollen Asthma and Hay Fever. L. N. Gay, Baltimore.—p. 456.
Distribution of Reagins in Blood Plasma. E. L. Sherrer, Cleveland. —p. 467.
*Dropping Out of Pollen Seasons (Relation of Pollen Content of Air to Hay Fever, Asthma and Dermatitis of Exposed Parts). W. W. Duke, Kansas City, Mo.—p. 471.
*Studies in Urticaria: Influence of Metabolic Factors. L. H. Criep and L. Wechsler, Pittsburgh.—p. 479.
*Basal Metabolism and Blood Calcium Studies in Asthma and Allergic Eczema. R. A. Kern and Ida Teller, Philadelphia.—p. 488.
Heat Sensitiveness: Case. R. A. Wilson, Tucson, Ariz.—p. 499.

Mechanism of Passive Transfer of Skin Sensitization.—The work presented by Becker and Black was planned with the purpose to determine, if possible, whether certain failures in passive transfer with serums from highly allergic subjects can be explained on the basis of serum properties of the donor, blood group relationships, differences in skin susceptibility of the recipient, or some other unknown factor. They noted that two out of three serums from sage hypersensitive subjects failed to sensitize the skin to the sage antigen in a group of twenty-three individuals. The refractory serums also failed to produce positive reactions with other antigens to which the donors are hypersensitive. With the positively reacting serum, twenty-two out of twenty-three tests were positive, the one member of the group probably having a refractory skin. Passive transfer may or may not be obtainable with the serums of patients with positive skin reactions and with marked clinical manifestations; also skin-sensitive individuals who never have had clinical manifestations may give a positive passive transfer. Passive transfer is not dependent on degree of skin sensitivity, on clinical manifestations, on temporary allergic state, or on previous desensitization treatment. Passive transfer is not dependent on differences in the blood group of the donor and recipient. The sensitizing factor is not absorbed in vitro by the blood cells from opposite blood groups or by fresh tonsil tissue, obtained from nonallergic individuals. The leukocytes do not carry the sensitizing factor. Serial injections increase skin sensitization. While failure in passive transfer may be due to a refractory skin, as noted by many observers, it seems probable that it may be due in some instances to the absence of the sensitizing factor in the donor's serum.

Fever by Diathermy.—Feinberg and his associates believe that there is no doubt that fever treatment by diathermy as used by them is capable of giving benefit to some sufferers from asthma. Disadvantages to this form of treatment are its expense due to overnight hospitalization, discomfort to the patient, the time-consuming element to the operator, the comparatively temporary nature of the relief, and the incomplete knowledge of the limitations of its uses. They are attempting to overcome some of these difficulties by experimenting with variations in technic and other observations. It must be emphasized that it is necessary to use caution in the selection of cases for this treatment. The treatment is strenuous and apparently places a temporary burden on the heart. It is necessary to make careful preliminary studies on the patient before such treatment is undertaken. Furthermore, it is best to limit this treatment to those persons who have resisted all ordinary forms of treatment. The authors are also investigating the use of this form of therapy in other allergies, such as hay fever, hyperesthetic rhinitis, and urticaria. At this time they have no intention of entering into a discussion of the mechanisms involved in the production of relief by this fever therapy. However, their experiments thus far lead them to believe that it lies neither in a change in the acid-base balance of the blood nor in the sensitiveness of the patient to the allergen, at least as far as skin sensitivity is concerned. Neither does it depend on any decided changes in the reagins. Developments in future experiments may possibly furnish a clue for this interesting phenomenon.

Dropping Out of Pollen Seasons.—Estimations of the pollen content of the air made daily by Duke for a period of four years show that the normal season, 1927, in which all the trees, grasses and weeds pollinated luxuriously, is a gross exception to the rule. Instead of the normal season, one usually finds that the pollination of one or more or all of the trees or grasses or weeds is reduced grossly. This is caused in the spring season by frosts and in the summer and fall seasons chiefly by drought. During this period of four years, the pollination of each pollinating plant, except the ragweed, was almost completely inhibited once or for several seasons. The ragweed was not completely inhibited at any season but in 1930 was reduced to a small proportion of normal. The author believes that pollen counts and pollen charts are almost indispensable to the accurate diagnosis and treatment of pollen disease.

Studies in Urticaria.—From an analysis of the allergic data in forty cases of urticaria, Criep and Wechsler conclude that changes in the gastro-intestinal and thyroid functioning are for the most part either coexisting with, contributory to, or resulting from the urticarial state. They are not sufficiently specific to bear a direct causal relation to urticaria. They may increase an existing predisposition and contribute to the general state of susceptibility of the patient. Urticaria patients frequently give a positive familial allergic history. They fre-

quently present manifestations of other allergic states. Their condition is traceable in a variable percentage of cases directly to contact with some specific substance. Hence the common denominator in these cases is hypersensitiveness.

Studies in Asthma and Allergic Eczema.—According to Kern and Teller, patients with bronchial asthma frequently have a subnormal basal metabolic rate. This tendency seems to be even more marked in patients with allergic eczema. There is a higher incidence both of thyroid enlargement and of a family history of goiter in asthmatic patients than in the average population. This would seem to suggest that the lowered metabolic rate is due to a depressed thyroid functioning. Evidence is presented to show that in most instances the lowered thyroid functioning is probably an effect, not a cause, of the allergic state. Total blood calcium estimations in seventy-five patients with bronchial asthma were practically all within normal limits. The blood calcium level did not bear a relation to the type of asthma (allergic or infectious), to the presence or absence of active symptoms, or to the basal metabolic rate. The estimation of the total blood calcium percentage is not of value in bronchial asthma.

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*Microdetermination of Fixed Bases, Calcium and Sulphates in Urine. W. S. Hoffman, Chicago.—p. 787.
Lactate Concentration in Blood of Rabbit After Injection of Sodium Lactate. I. A. Parfentjev, V. D. Suntzeff and B. F. Sokoloff, St. Louis.—p. 797.

Bone Solubility in Solutions of Magnesium Salts.—Forbes studied the solubility of bone in various solutions of magnesium salts and found that: 1. The solubility of bone calcium in water solutions is greatly increased by magnesium salts; the greater the magnesium concentration, the greater the calcium solubility. 2. In the absence of phosphates from the original solution, the calcium goes into solution as a phosphate and as some other compound, possibly a basic compound such as the hydroxide or carbonate. 3. When phosphates are present to even a moderate extent in the original solution, marked solution of bone calcium may take place with an actual decrease in the phosphate concentration of the solution. 4. Increasing the calcium or phosphate concentration of the original solution decreases the solution action of magnesium salts, especially when these are present in low concentrations. 5. Bone has been found to have a marked neutralizing action against acids, the p_H of all weakly acid solutions being rapidly increased to over 7 by the neutralizing action of the bone.

Metabolism of Eskimos.—Heinbecker found that normal Eskimo subjects developed a very mild degree of ketosis during a period of fasting. A pregnant lactating Eskimo excreted a much larger amount of acetone bodies; less, however, than one would anticipate from a white subject under similar circumstances. The basal metabolism of Eskimos living on a mixed diet was found to be similar to that of persons living on such a diet in temperate zones. The small degree of ketosis together with the low respiratory quotients obtained during fasting is interpreted as indicating that Eskimos are able to oxidize fats more completely than ordinary persons.

Acetone in Blood.—Himwich and his associates studied the acetone metabolism of organs in situ in twelve depancreatized and six phlorhizinized dogs. The liver was found to be the chief site of acetone production (twenty-seven of twenty-nine experiments), while muscle and the organs drained by the portal vein liberated acetone bodies in eighteen experiments, and removed that substance in twenty-four others. These results indicate that the acetone excretion by the kidney and lungs is the algebraic sum of the actions of the various organs.

Sugar Distribution in Blood.—Spannuth and Power determined the reducing substances in the corpuscles of heparinized blood simultaneously by the direct and indirect methods of analysis. Comparable results were obtained only when careful precautions to prevent glycolysis were observed. The indirect calculation of the corpuscle sugar is believed to be the more reliable procedure, especially when antiglycolytic agents are not used. Under the conditions of the experiments the average ratio of the concentrations of fermentable reducing substances in the corpuscles and the plasma of normal persons was found to be 0.84. The ingestion of 100 Gm. of dextrose by a normal subject results in practically no change in the distribution ratio, on either the ascending or descending parts of the sugar tolerance curve. The intravenous injection of insulin, however, results in material increases in the distribution ratio. This indicated a tendency toward a relative excess of dextrose in the corpuscles, probably due in part to the accelerated rate of removal of dextrose from the plasma during the action of the insulin. When 100 Gm. of dextrose is taken by patients with diabetes the rate of increase of the dextrose in the plasma may exceed the rate of diffusion into the corpuscles, with a consequent temporary downward shift in the distribution ratio and hence in the concentration of dextrose in the corpuscles relative to the plasma. Other than this, the data at hand indicate that the distribution of fermentable reducing substances in the blood of persons with diabetes, and the changes in distribution incident to the ingestion of dextrose are not different from those found in normal persons. There is thus no evidence that the permeability of the corpuscles to dextrose or the content of dextrose in the corpuscles relative to the plasma is any different in diabetic than in normal persons.

Effect of Ergosterol on Nitrogen, Calcium and Phosphorus Metabolism in Rats.—In growing rats receiving large daily doses of viosterol, Kern and her associates found macroscopic and microscopic evidence of the accumulation of much calcium in the kidneys. Chemical analyses of those organs revealed the deposition to be much greater in the cases of the females than in the males. Viosterol in large doses increases the absorption of calcium from the intestine. The excretion of calcium in the feces decreases and the excretion in the urine is greatly increased. To a lesser degree there is also a diminished fecal elimination of phosphorus. Ergosterol irradiated in alcohol produces greater disturbances in the calcium metabolism of growing rats than ergosterol either irradiated in ether or irradiated dry, on the basis both of actual weight of ergosterol fed and of the vitamin D content of the samples. The authors therefore believe that the medium in which the ergosterol is irradiated plays an important part in the development of toxicity. The nitrogen excreted in the urine

seemed to have been entirely within the normal range, being affected mainly by the level of food intake. Whatever changes may occur in the way of deposition or absorption of bone in rats fed large amounts of viosterol, analyses of the leg bones of these animals show normal contents of calcium, phosphorus and carbon dioxide.

Effect of Magnesium on Magnesium and Calcium Metabolism in Man.—Carswell and Winter added 8 Gm. of magnesium lactate a day over periods of twenty and twenty-four days, respectively, to the uniform, phosphorus-adequate diet of two subjects. Definite calcium retention resulted in one case and a slight calcium retention in the other. Conversely, the magnesium retention in the former case was slight; in the latter it was marked. The urinary calcium was decreased slightly in both cases. The fecal calcium was materially decreased in the case which showed marked calcium retention and increased in the other. The urinary and fecal magnesium were increased in both cases. On the basis of their observations the authors conclude that with adequate phosphorus intake magnesium appears to favor calcium storage instead of causing calcium loss.

Experimental Hyperparathyroidism.—Bodansky and Jaffe believe that the hypocalcemia they observed in guinea-pigs several days after the discontinuance of prolonged parathyroid treatment was probably due to the rapid redeposition of calcium in the previously depleted bones, associated with changes in the phosphorus balance. It is also suggested that a temporary hypofunction of the parathyroids may have been caused by the prolonged parathyroid treatment; immediately after the termination of experimental hyperparathyroidism, the hypofunction of the parathyroids contributes to the production of the complex that is characteristic of the period of recovery—hypocalcemia, hyperphosphatemia, and a positive calcium and phosphorus balance. The same explanations are suggested for the analogous developments following the removal of parathyroid adenomas in osteitis fibrosa cystica (Recklinghausen's disease).

Fixed Bases, Calcium and Sulphates in Urine.—Hoffman reports a new system for the determination of the individual and total fixed bases as well as sulphates in urine. All the analyses are made from a single protein-free filtrate prepared from the urine. The methods for total fixed base, calcium and sulphates were modified so that they have the advantage of simplicity, accuracy, rapidity, and of requiring only a small quantity of urine. Data are presented confirming the accuracy of the proposed methods.

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Levels of Nursing: Practical Nurse, Trained Nurse, Specialized Nurse, and Their Relations to Economics of Illness. C. T. Stone, Galveston, Texas.—p. 902.
Preparatory and Technical Education of the Nurse. Jane van de Vrede, Atlanta, Ga.—p. 907.
Importance of Dental Clinic in Dispensary. F. C. Elliott, Memphis, Tenn.—p. 912.
Correlation of Medical and Dental Education. J. T. O'Rourke, Louisville, Ky.—p. 916.

Surgery, Gynecology and Obstetrics, Chicago

53: 433-592 (Oct.) 1931

*Rôle of Pancreatic Juice in Production of Gallbladder Disease. J. A. Wolfer, Chicago.—p. 433.
*Incidence of Gallstones and Gallbladder Disease. C. Crump, Mount McGregor, N. Y.—p. 447.
*Chronic Inflammation of Salivary Glands With or Without Calculi. G. B. New and F. R. Harper, Rochester, Minn.—p. 456.
*Roentgenographic Diagnosis of Diseases of Breast. P. S. Seabold, Philadelphia.—p. 461.
Malignant Changes Occurring in Benign Giant Cell Tumors of Bone. C. C. Simmons, Boston.—p. 469.
Persistent Bronchial Fistula: Experimental Production and Method of Treatment. W. E. Adams and H. M. Livingstone, Chicago.—p. 479.
Aschheim-Zondek Pregnancy Reaction: Report Based on Two Thousand Controlled Aschheim-Zondek Pregnancy Tests. K. Ehrhardt, Frankfurt-on-the-Main, Germany.—p. 486.
Surgical Approach and Treatment of Tumors and Other Lesions About Optic Chiasm. G. J. Heuer, Cincinnati.—p. 489.
Steps Toward Standardization of Perineal Prostatectomy. F. Hinman, San Francisco.—p. 519.
Surgical Treatment and Management of Pharyngo-Esophageal Diverticulum. A. E. McEvers, Rock Island.—p. 525.
Cancer of Lip: Report of Eighty-Eight Cases from Steiner Clinic. C. B. Stewart, Atlanta, Ga.—p. 533.
Roentgenologic Pelvimetry and Intra-Uterine Cephalometry. H. J. Walton, Baltimore.—p. 536.
Superficial and Deep Continuous Suture. J. Sarnoff, Brooklyn.—p. 539.
Suspension of Uterus: Modification of Technic. R. W. Lagersen, Minneapolis.—p. 545.
One Hundred and Seventeen Consecutive Cervical Cesarean Sections Without Maternal Mortality. J. P. Greenhill, Chicago.—p. 547.

Pancreatic Juice in Production of Gallbladder Disease.—Wolfer states that in the dog, when pancreatic juice is conveyed into the terminal end of the common duct, it can find its way into the gallbladder. In all cases in which pancreatic juice was introduced into the gallbladder of the dog, there followed unmistakable pathologic changes in the wall of the gallbladder. It was shown by the author that in the dog if pancreatic juice was introduced into the common duct for a short period of time there followed a typical pathologic picture of chronic cholecystitis which was definitely present 186 days later. By analogy it is reasoned that in the human being, owing to a continuous pathway between the pancreatic and the bile ducts, in a variable percentage of cases it is possible for pancreatic juice to enter the gallbladder and produce pathologic changes.

Incidence of Gallstones and Gallbladder Disease.—Crump reports the results of a study of the material from 1,000 routine necropsies at the City Hospital in Vienna. In

the series, which consisted of 450 males and 550 females, 87.1 per cent were over 30 and 77.9 per cent over 40 years of age. Gallstones were present in 32.5 per cent of the cases. They were present in 37.8 per cent of the females and 26.2 per cent of the males. Twenty-five per cent of the individuals were affected after the fourth decade and 50 per cent after the seventh. Inflammatory or common gallstones made up 73 per cent of the stone cases. Cholecystopathy occurred in 59.6 per cent of all cases and affected males in 58.4 per cent and females in 60.2 per cent. With the advance of the decades the case incidence increased from 20 per cent in the first age group to 77.6 per cent in the eighth decade. Chronic pericholecystitis was the most frequent pathologic condition (82.2 per cent) and chronic cholecystitis was next in frequency (50.2 per cent). Primary carcinoma of the biliary tract occurred in 26 instances —7 males and 19 females—in which stones were present in all but 4 cases. In 2 cases the growths were primary in the ducts. Cholesterosis of the gallbladder was present in 36.8 per cent of all cases. Males were affected in 35.8 per cent and females in 37.7 per cent of the cases. This condition was frequent in the early decades and maintained a more or less constant average throughout the age groups. If cholesterosis is to be considered a pathologic condition, the general average of cases of cholecystopathy would be raised to 76.1 per cent. Pathologic conditions were present in the biliary tract in 41.3 per cent of all cases. Males were affected in 34.9 per cent; females in 46.5 per cent. There was an increase in incidence of disease with the advance of the decades. The most frequent observation was dilated ducts in 50.8 per cent and next frequent a lacerated papilla of Vater in 47.7 per cent of the abnormal conditions. Gallstones were found in the bile duct in 78 cases, which is 24 per cent of the cases with cholelithiasis. Males were affected in 6.6 per cent and females in 8.7 per cent of the cases. This observation was not affected by the age of an individual, so that any patient with gallstones has one chance in four of having stones in the bile ducts. The most common site was at the papilla of Vater (60.2 per cent) and the next frequent site the cystic duct, 48.7 per cent. The figures presented by the author are definitely higher than those found in similar studies in the literature.

Chronic Inflammation of Salivary Glands.—According to New and Harper, the symptoms and clinical picture of chronic inflammation of the salivary glands are sometimes not recognized by either internist or surgeon, with the result that mistakes in diagnosis and treatment are often made. The disease does not necessarily have to be associated with the presence of a stone in the gland or duct, and the stone, if present, is not always demonstrable by the roentgenogram. The authors report 110 cases of nonspecific inflammation of the salivary glands, in 70 of which salivary calculi were present also. They excluded from this group all cases in which tuberculosis, syphilis and actinomycosis were the etiologic factors; also cases of acute and postoperative parotitis and cases in which there were malignant lesions about the mouth or face. Although the clinical grouping of chronic inflammatory conditions of the salivary glands usually includes the presence or absence of a stone, from a clinical standpoint this makes little difference. Patients with chronic inflammation of the salivary glands usually present themselves for examination, first, because of exacerbation of acute infection in an old chronic inflammatory salivary gland, and, secondly, because of obstruction of the duct by a small stone blocking the drainage of saliva. The most common complaint is the repeated exacerbations of acute infections rather than the symptoms of obstruction from a stone. In all cases of salivary calculi, one can express pus or mucopus from the duct, and it is the acute exacerbation of this infection which is the most common symptom for which the patients present themselves. Some patients have had tonsils or wisdom teeth removed in an attempt to get rid of the repeated submaxillary inflammatory condition. So-called salivary colic due to the swelling of the salivary gland behind the stone, accompanied by sudden severe pain in the floor of the mouth, tongue and side of the throat, occurring during meals or sometimes with the mere sight of food, is an occasional symptom but not the most common in this group of cases. The treatment depends on the condition at the time the patient comes for examination. If there is an acute infection, as there often is, the use of hot irrigations and hot dressings is the advisable treatment until the acute condition subsides. Probing the duct or any manipulation at this time not only is not beneficial but frequently increases the cellulitis and is an extremely dangerous procedure. After the acute condition has subsided, roentgenograms are made to exclude the presence of a stone. If a stone is present and is situated anteriorly in the gland or in the duct, removal through the mouth is the treatment of choice. Removal of the stone, however, may not clear up the condition of the gland, because of the nature of the gland and the multiple pockets of inflammation that may be present. In a group of forty cases of chronic inflammation without stone, eighteen patients had received treatment before examination at the clinic. Drainage from the outside was instituted in thirteen; drainage through the duct, the duct having been probed, in three; and a stone had been removed from the duct in one case. In the latter group of cases, if the exacerbations are giving sufficient trouble, the only treatment advisable is removal of the entire gland if the condition is present in the submaxillary region. The entire gland was removed in all but two of the author's cases, without recurrence in any. In a small group of cases in which the parotid gland has been involved, vaccine has been used, but the results have been rather indifferent. In some cases much benefit has resulted. Treatment by roentgen rays has been advocated in cases in which the parotid gland was involved in order to destroy the substance of the gland.

Roentgenographic Diagnosis of Diseases of Breast.—Owing to the fact that many malignant tumors of the breast occur in women after the menopause, Seabold believes that it is necessary to contrast the malignant breast with the normal breast of this particular period. The normal breast after menopause has a somewhat shrunken or contracted appearance with a compactness that is greater than that of the normal menstruating subject. As far as the compactness is concerned, that is, the increase in roentgen density, it is much like that of the malignant breast and in some instances can hardly be differentiated. On the whole, the roentgen diagnosis is made on the following points: First, the location of the increased density. In the breast of the menopause, it has been found that, in general, the architecture follows that of the normal menstruating breast. In fact, its greatest density appears at or along the pectoral border in a more or less triangular outline, whereas in a malignant tumor the opacity may be in any shape or size, lying in any portion of the breast. The breast of the menopause practically always presents a single triangular opacity, while a malignant breast often presents multiple shadows. Second, after the menopause there is a general heavy lacelike, or a surflike, appearance at right angles to the linear striations of the breast triangle. Its density increases as one nears the pectoral border, whereas in the malignant breast the architecture has more of a whorling character with fringed borders extending out in all directions into the surrounding tissues of the breast proper. Metastasis is demonstrated in the pectoral and axillary lymph nodes as a faint opacity on the roentgenogram, but it has been found that an enlarged inflammatory lymph node will throw a similar shadow, although not as heavy as that cast by the malignant node. It should therefore be borne in mind that not all opacities in the pectoral and axillary lymph chain areas should be considered evidences of metastasis. Since, however, it has been found that a normal lymph node will not throw a roentgen shadow, it follows that when there are opacities of irregular sizes in the region of the axillary and pectoral chains it may be stated that there are pathologic changes present in the area drained by these lymphatics, and that it is a malignant growth or an area of suppuration. To determine the difference between these two conditions, history, physical examination and roentgen examination of the area drained by the nodes will practically always decide. Actually, a roentgenogram of the main mass of the pathologically changed tissue will often give the real diagnosis. The roentgen appearance of malignant lymph nodes is that of a chain of small, increased densities in the axilla and on the pectoral fascia. The only difference in the roentgen appearance of an inflammatory node as far as can be determined at present is perhaps that its shadow is somewhat less dense.

Tennessee State Medical Assn. Journal, Nashville

24: 365-406 (Oct.) 1931

Treatment of Varicose Veins and Ulcers by Sclerosing Solutions and Unna's Boot. E. T. Newell, Chattanooga.—p. 365.
Surgical Treatment of Detachment of Retina. E. C. Ellett and R. O. Rychener, Memphis.—p. 371.
Treatment of Leukorrhea. J. C. Burch, Nashville.—p. 377.
Coronary Thrombosis. O. N. Bryan, Nashville.—p. 382.
A Romance of Paternalism. W. F. Donaldson, Pittsburgh.—p. 387.
Treatment of Fibroid Tumors of Uterus with Analysis of Three Hundred and Eighteen Cases. W. C. Dixon, Nashville.—p. 390.

Texas State Journal of Medicine, Fort Worth

27: 417-480 (Oct.) 1931

Epithelioma of Eyelid. C. F. Lehmann, San Antonio.—p. 422.
Intracapsular Cataract Extraction. R. K. Daily and L. Daily, Houston.—p. 426.
Demonstration of Hormones in Urine of Pregnancy. Martha A. Wood, Houston.—p. 431.
Roentgen Ray as Adjunct in Diagnosis of Pregnancy. W. G. McDeed, Houston.—p. 434.
New Oxygen Therapy Apparatus. T. A. Taylor, Lufkin.—p. 436.
Eugenic Sterilization. O. L. Norsworthy, San Antonio.—p. 438.
Angioneurotic Edema. S. T. Wier, Beaumont.—p. 444.
Prevention of Congenital Syphilis. W. Clarke, New York.—p. 447.
Use of Belladonna and Ovarian Preparations in Treatment of Ureteral Pathologic Conditions. R. E. Van Duzen, Dallas.—p. 453.
Acute Peritonitis: Various Causes, Diagnosis and Treatment. C. W. Flynn, Dallas.—p. 456.
Bladder Neck Obstruction. J. R. Caulk, St. Louis.—p. 459.

Western J. Surg., Obst, & Gynecology, Portland, Ore.

39: 729-808 (Oct.) 1931

Preliminary Report of Occurrence of Phymatorhusin and Its Prophase in Urine as Test Indicative of Malignancy. L. C. A. Haffner, San Francisco, and Winfred H. Bueermann, Portland.—p. 741.
*Carcinoma of Uterine Cornu and Interstitial Portion of Fallopian Tube: Case. W. C. Hunter and W. B. Holden, Portland.—p. 746
*Ophthalmologic Symptoms Associated with Intracranial Injuries. F. A. Plum, Honolulu, T. H.—p. 754.
Newer Methods of Thiersch Grafting. W. S. Kiskadden, Los Angeles.—p. 758.
Meningitis in the New-Born, Simulating Intracranial Hemorrhage. M. L. Bridgeman, Portland.—p. 763.
Studies in Etiology and Nature of Simple Goiter as Produced Experimentally in Rabbits. B. Webster, New York.—p. 765.
A Clinical and Pathologic Study of Carcinomatous Gastric Ulcer, with Particular Reference to Grading of Malignancy. W. H. Bueermann, Portland.—p. 774.
Suppurative Labyrinthitis: Case, Pathologic Findings. E. F. Ziegelman, San Francisco.—p. 785.

Carcinoma of Uterine Cornu.—Hunter and Holden report a case of papillary adenocarcinoma occurring in the uterus of a woman, aged 30, giving a history of menorrhagia almost continuously since the onset of the menses, relieved temporarily on three occasions by curettage, but always recurring with increasing severity. On the last admission to the hospital, the symptoms closely simulated those of incomplete abortion but microscopic examination of the material evacuated from the uterus revealed adenocarcinoma. The extirpated uterus was found to contain a papillary carcinoma situated so far laterally in one cornu that it escaped the curet and was found only by making many cuts at close intervals. Microscopic serial sections were necessary to determine whether the growth arose from tubal or endometrial epithelium. The latter proved to be the origin of the neoplasm in what was in all probability at one time a benign polypus. Pressure by surrounding muscle molded the growth, preventing centrifugal extension in all directions, except into the cavum uteri. An entirely parallel instance was not found in the available literature.

Ophthalmologic Symptoms in Intracranial Injuries.—Plum enumerates the ophthalmologic symptoms associated with intracranial injuries thus: A circumorbital ecchymosis is important. Sudden complete loss of vision in one eye following trauma may mean a fracture through the optic foramen. A dilated pupil usually means a lesion on that side. A complete third nerve paralysis means a basal lesion and is a bad sign. A contracted pupil may mean sympathetic paralysis. Early eyeground changes are represented by engorgement of the veins, and a choked disk is a late symptom. Visual field studies are of great value. Disassociated ocular movements mean pathologic changes in the anterior part of the aqueduct of Sylvius. A destructive lesion may be differentiated from an irritative lesion by the action of the ocular muscles.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Pickett-Thomson Research Lab., London

7: 1-441 (July) 1931

Rôle of Streptococci in Erysipelas. D. Thomson and R. Thomson.—p. 1.
Historical Survey of Researches on Rôle of Streptococci in Skin Diseases. D. Thomson and R. Thomson.—p. 111.
Rôle of Streptococci in Measles. D. Thomson and R. Thomson.—p. 191.

Brain, London

54: 247-376 (Sept.) 1931

*Experimental Production and Prevention of Degeneration in Spinal Cord. E. Mellanby.—p. 247.
Lesions of Central Nervous System Characteristic of Pellagra. O. R. Langworthy.—p. 291.
Equilibrium Between Cerebrospinal Fluid and Blood Plasma: V. Osmotic Pressure (Freezing Point Depression) of Human Cerebrospinal Fluid and Blood Serum. R. Fremont-Smith, G. W. Thomas, Mary Elizabeth Dailey and Margaret P. Carroll.—p. 303.
Parathyroid Tetany in Dogs, and Its Abolition by Curare. H. Hartridge and R. West.—p. 312.
On Posture and Postural Reflex Action: Effect of Unilateral Lumbar Sympathetic Chain Extirpation. G. Phillips.—p. 320.
Two Cases of Oligodendroglioma: Remarks on General Clinical Features of Such Cases. J. P. Martin.—p. 330.
Cutaneous Tactile Localization. E. A. B. Pritchard.—p. 350

Degeneration in Spinal Cord.—Mellanby noted that when diets containing a large amount of cereal (other than yellow maize) and deficient in vitamin A or carotene are eaten by young puppies, degenerative changes in the spinal cord in the form of demyelination of the nerve fibers, which can be readily observed by Marchi's method of staining, can generally be observed. The addition to the diet of from 2 to 5 Gm. of ergot daily under these conditions hastens and intensifies these degenerative changes. Rye germ also hastens the changes and in some experiments wheat germ has been found to have a similar but less pronounced effect. The presence in the diet of any rich source of vitamin A such as liver oil (mammalian or fish), whole milk, butter or egg yolk or some source of carotene such as green vegetables or carrots, or carotene itself, prevents or diminishes these degenerative changes even when ergot is eaten. Spinal cord degeneration of this type does not seem to develop until the reserves of vitamin A in the liver are dispersed. Since these stores may be very large in well fed animals, the time of onset of the symptoms of spasticity, incoordination and weakness varies greatly in different litters of animals. In the case of ergot, the changes are seen usually after from two to four months on the diet. Not only do vitamin A and carotene prevent the degenerative changes, but even in affected animals there is great improvement in the clinical condition on the addition of either of these substances to the diet. The possible bearing of these results on convulsive ergotism, pellagra, lathyrism and the subacute combined degeneration in pernicious anemia, tabes dorsalis, multiple sclerosis and even on the malarial treatment of nervous syphilis is discussed.

British Journal of Ophthalmology, London

15: 545-608 (Oct.) 1931

Device for Accurate Localization of Holes in Retinal Detachments. R. F. Moore.—p. 545.
*Contact Glasses. A. Rugg-Gunn.—p. 549.
Ophthalmomanometry. W. S. Duke-Elder, P. M. Duke-Elder and J. C. Colle.—p. 575.
Case of Dermofibrolipoma of Conjunctiva Associated with Other Congenital Abnormalities. H. B. Stallard and P. P. Martin.—p. 580.
Scleritis as Sequela of Herpes Ophthalmicus. G. G. Penman.—p. 585.
Neutralization in Dynamic Retinoscopy. J. I. Pascal.—p. 589.

Contact Glasses.—Rugg-Gunn states that at present contact glasses are a novelty. A good many at present undoubtedly find something rather repulsive in the idea of inserting a glass in the eye. There is the fear of discomfort and the fear that it is not safe. The latter is unjustified. A contact glass, owing to its position in the orbit, is well protected from injury, much better than a spectacle lens. Should one be broken in situ, the risk of penetrating the cornea is small. An illustration will make this clear. If a thin cover glass, such as is used for microscopic slides, is placed on the back of the hand

and shattered by a blow, the skin will probably escape injury. If, however, a cover glass is fixed an inch away and then broken by a blow that tends to drive the particles along the direction of force toward the hand, the chances are that some of the fragments will be driven into the latter. The former example is analogous to the contact glass; the latter to the spectacle lens. It will require a much more extended use of contact glasses than obtains today before it is known what percentage can wear them all day without discomfort. Undoubtedly many people do. On the other hand, a fair percentage appear to be unable to tolerate them for from three to six hours daily even after prolonged trial. This is not always the fault of the contact glass. The solution has something to do with it, or the state of the conjunctiva. The presence of even a low grade chronic conjunctivitis will often after a few hours' wear render the fluid turbid and induce discomfort and lacrimation. With greater experience these and similar questions will doubtless be solved. The gain in three directions—monocular perspective, binocular fusion and increased field of vision—should insure for these glasses an extended use in certain occupations and pursuits. Contact glasses, being maintained at the body temperature, have the additional advantage that neither fog nor rain can condense on them. Further, they protect the cornea from wind and the eye from glare. The protection from the latter is enhanced by the tinted varieties. The use of contact glasses as an aid in the treatment of certain diseases of the eye is a field still largely unexplored. Contact glasses, especially when tinted, are of great value in relieving certain symptoms of albinism, such as defective vision, photophobia, and even nystagmus. They may be used with advantage, for similar reasons, in cases of phlyctenular conjunctivitis associated with blepharospasm and photophobia in children. They are indicated in many varieties of keratitis, inflammatory, neuroparalytic and degenerative; and in plastic operations on the cornea they are valuable for maintaining the grafts in position. When used for the treatment of corneal ulcers, continuous application of an antiseptic ointment can be secured by smearing the preparation on the inner surface of the glass. They have also been used in iritis. In no class is the value of contact glasses more manifest than in the group of visual defects due to irregular corneal astigmatism. Examples with diffuse interstitial haze, with scattered nebulae, even cases with definite keratinization are improved, often considerably. In one case, a man with double conical cornea, vision in the better eye improved under contact glass correction from 2/60ths to 6/9ths partly. Conical cornea appears to be especially suitable for this form of correction.

British Journal of Physical Medicine, London

6: 103-138 (Sept.) 1931

Life and Discoveries of Michael Faraday. S. Russ.—p. 105.
Influence on Electrotherapy of Faraday's Work and Teaching. W. J. Turrell.—p. 107.
Physical Basis of Medical Electricity. B. D. H. Watters.—p. 110.
Therapeutic Uses of Faradic Current. L. D. Bailey.—p. 113.
Some Uses of Galvanic Current in Therapy. Justina Wilson.—p. 115.
High Frequency and Diathermy. E. P. Cumberbatch.—p. 117.
Action of Ultraviolet and Infra-Red Radiation. L. Hill.—p. 119.

British Medical Journal, London

2: 639-686 (Oct. 10) 1931

*Diagnosis and Treatment of Common Injuries of Knee Joint. N. Dunn.—p. 639.
Diagnosis and Treatment of Acute Otitis Media. H. V. Forster.—p. 645.
Subacute Otitis Media. A. L. Yates.—p. 647.
*Uses and Misuses of Vaccines. J. A. B. Hicks.—p. 650.
Organization of Treatment for Infantile Paralysis. G. M. Levick.—p. 652.

Common Injuries of Knee Joint.—Dunn's investigation of 522 consecutive cases of injury to the knee joint demonstrates that almost 50 per cent are lesions of the intra-articular cartilages. While accurate diagnosis of an original injury may be difficult, the cause of recurrent lesions can usually be established as a result of a carefully taken history, together with the clinical and roentgen observations. Indefinite lesions are common. They include conditions analogous to tennis elbow, tenosynovitis, and so on, commonly referred to in relation to other joints. The inaccessibility to direct palpation of certain regions of the knee joint probably accounts for this. While conservative treatment or manipulative surgery is successful in many cases, a surgical exploration of the joint will always be necessary for the cure of a large number. In the surgical approach to the inner side of the joint, incisions which may divide the patellar branch of the internal saphenous nerve should be avoided.

Uses and Misuses of Vaccines.—As regards the type of case suitable for vaccines, Hicks thinks success is more likely with young people than with old, and the nearer one gets to the age of 50 the less likely one is to have success. After 50 he always hesitates to advise a vaccine. In many types of infection a pathologist or bacteriologist should see the patient it is proposed to treat. A bacteriologist who is accustomed to treat patients with vaccines is apt to know more about the chances of success with any given case. Patients with a high temperature are unsuitable for vaccine therapy; and in acute infections it is unwise to give vaccines. Patients with conditions of great chronicity, such as chronically infected sinuses, particularly if there is any cause, such as a buried stitch or a piece of dead bone, are quite hopeless until the cause has been removed; then healing perchance may be accelerated by the administration of a suitable vaccine. Very chronic colon bacillurias, again, are quite unsatisfactory cases, for the time to put a patient on a coli vaccine is in the acute stage as soon as or, in some cases, when the fever is not severe, before the temperature falls. One should not regard a vaccine as a thing apart from ordinary therapy but as a part of ordinary therapy, another weapon to be used in suitable cases along with drugs and surgical operations.

Edinburgh Medical Journal

38: 561-604 (Oct.) 1931

*A Study of Five Hundred and Twenty-Three Cases of Obesity. D. M. Dunlop and R. M. M. Lyon.—p. 561.
*Hyperthyroidism: *A Statistical Presentation of Its Symptomatology. H. L. Wallace.—p. 578.

A Study of Five Hundred and Twenty-Three Cases of Obesity.—Dunlop and Lyon discuss the etiology of obesity and the results of treatment in a review of 523 cases of overweight persons. They believe that a strict classification of all cases of obesity into endogenous and exogenous types is not possible. Only 8.2 per cent of the cases studied were definitely endogenous, while 37.2 per cent were most probably exogenous. The remaining 53.6 per cent were probably of a mixed type. Heredity is an important etiologic factor in the production of obesity. Sixty-nine and two tenths per cent of the patients had overweight fathers or mothers. The most important dietetic error in overweight persons is an excessive carbohydrate intake. Forty-five per cent of the patients had been excessive carbohydrate eaters. The degree of obesity is largely determined during the first few years of the condition, and thereafter the duration of obesity has, on the average, little effect on the patient's corpulence. Contrary to expectation, 59.7 per cent of the patients claimed to be of an excitable disposition, and only 10.4 per cent phlegmatic. There is a high incidence of gallstones among the obese. An average loss of weight in outpatients of 1.9 pounds per week was obtained by dietetic treatment alone. Thyroid is not a substitute for diet, though it may be an auxiliary to it. Purely endogenous cases respond perfectly satisfactorily to dietetic treatment alone. Long-continued obesity is not a drawback to successful dietetic treatment. A subcaloric diet tends to have a constipating effect on the patients. On discontinuing treatment there is a tendency for weight to be slowly regained. This can usually be avoided by only a slight modification of a normal diet. The greater the original excess weight, the more rapid is the loss under treatment and the greater the tendency for the patient to regain weight on discontinuing the diet.

Hyperthyroidism.—According to Wallace, hyperthyroidism is a disorder of adolescent and adult life, and further of active sexual life. It has a definite familial incidence and may occur in several members of the same family. Nervous strain has a highly important rôle in the etiology of the disease. Various infections appear to act as exciting factors in a considerable percentage of cases. In the author's series of patients, influenza

and tonsillitis were the most frequent antecedent infections. Loss of weight occurs in proportion to the duration rather than the severity of the symptoms. Growth in height is not affected by the disease. Long-continued hyperthyroidism is an important factor in the causation of auricular fibrillation. Constipation occurs more frequently than diarrhea in hyperthyroidism, but the activity of the bowels is found to be increased when compared with a series of controls. In "potential hyperthyroid persons" the age at which menstruation commences does not show any significant variation from the normal.

Irish Journal of Medical Science, Dublin

69: 483-534 (Sept.) 1931

Endocrine Physiology. E. Sharpey-Schafer.—p. 483.
*Ketogenic Treatment of Epilepsy. C. Bastible.—p. 506.

Ketogenic Treatment of Epilepsy.—Twenty-nine adult females suffering from what was described in all cases as "epileptic insanity" were started on a ketogenic diet by Bastible in November, 1929. Most of the patients had epilepsy of the grand mal type and many had both grand and petit mal. The treatment was continued for a period of six months. In twenty of the cases, a reduction in the number of seizures took place over a period of six months. In two of the cases, after the first month of treatment there was a complete cessation of seizures for the remaining period during which they were under observation. The addition of acid salts to the diet in the last two months of treatment, combined with some restriction of fluid intake, seemed to have a definite beneficial effect in still further reducing the number of seizures. Four of the patients showed a substantial increase in the number of seizures occurring while they were on treatment, as compared with the number before treatment. In those four cases, however, there was evidence of organic degeneration of the brain. Several interruptions of ketonuria occurred in a number of the cases, and there was a definite increase in the number of seizures when ketones were absent from the urine. The number of patients treated, and the period during which they were under treatment, are too limited to permit one to draw any definite conclusions as to the value of the ketogenic diet in adult epilepsy, but the results seem to indicate that the treatment is at least worth while, since all other therapeutic measures not alone give bad results but in many cases cause definite organic degenerative changes to occur or to increase.

Medical Journal of Australia, Sydney

2: 375-404 (Sept. 26) 1931

Angina Pectoris and Coronary Occlusion. C. B. Blackburn.—p. 375.
Use of Packing in Postoperative Treatment of Some Nasal Operations and a Few Aural Operations. J. J. Woodburn.—p. 390.

South Africa M. Assn. Journal, Cape Town

5: 549-584 (Sept. 12) 1931

Technical and Administrative Dilettantism in Public Health. N. H. Swellengrebel.—p. 551.
Traumatic Fat Necrosis of Breast. J. J. Levin.—p. 552.
Medical Services for Rural Areas. A. Hay-Michel.—p. 555.
Technic of Intravenous Saline. M. C. Rous.—p. 558.
History of Congress. C. L. Leipoldt.—p. 561.
Johannesburg's Medical Congresses, in Retrospect and Prospect. W. A. J. Cameron.—p. 566.

Tubercle, London

13: 1-48 (Oct.) 1931

Future of Artificial Pneumothorax Treatment from Administrative Point of View. N. Tattersall.—p. 1.
Future of Artificial Pneumothorax Treatment. L. T. S. Burrell.—p. 4.
Experiments on Filtrable Phase in Life History of Tubercle Bacillus. R. R. Mellon.—p. 10.

Journal of Oriental Medicine, South Manchuria

15: 35-50 (Sept.) 1931

Collateral Respiration. Its Demonstration, Its Nature and Its Function: II. Occurrence of Collateral Respiration Between Pulmonary Lobules. C. M. Van Allen.—p. 35.
Emissary Veins of Cranial Bones in Chinese. S. C. Tung.—p. 46.
Induration at Urinary Tract of Penis. H. T. Huang.—p. 48.
Electrocardiogram of Infant's Rachitis. N. Hoshi.—p. 49.
Electrocardiogram of Children's Myxedema. N. Hoshi.—p. 49.
Electrocardiogram of Children's Beriberi. R. Sasaki and N. Hoshi. —p. 50.

Annales de l'Institut Pasteur, Paris

48: 221-338 (Sept.) 1931

*Experimental Researches on Reciprocal Effects of B C G and Concomitant Infection with Pseudotuberculosis Bacteria and Streptococci. A. Saenz. —p. 221.
Subcutaneous Antituberculosis Immunization: Tests with B C G in Algeria. H. Foley, L. Parrot, L. Céard and S. Champouillon.—p. 245.
*Seroprophylaxis and Serotherapy in Tetanus. S. Mutermilch and E. Salamon.—p. 277.
Bacillus in Testing Presence of Rhamnose. A. Castellani.—p. 297.
Value of Intradermal Reaction in Diagnosis of Undulant Fever. C. Dubois and N. Sollier.—p. 311.
Chemical Nature of Substance Causing Anaphylaxis. M. M. Desplanques, Simonnet and Verge.—p. 332.

Effects of B C G and Concomitant Infection with Pseudotuberculosis Bacteria and Streptococci.—Saenz, who believes his experiments oppose the results of other workers, concludes that neither the lymphatic infection produced by the pseudotuberculosis bacillus (Preisz-Nocard) nor the acute, chronic, local or general infection, provoked by Streptococcus caviae, modifies the pathogenic properties of B C G inoculated previously, simultaneously or ulteriorly through the same or different routes. The lesions that result when B C G is injected into guinea-pigs infected with the pseudotuberculosis bacillus or streptococci do not differ in any way from lesions in normal guinea-pigs. When tissues injured by B C G are reinoculated in series from guinea-pig to guinea-pig, the bacilli that they contain decrease in number after the second passage and disappear after the third. The streptococcic infection is not modified by a massive intraperitoneal inoculation of B C G injected after a subcutaneous or intraperitoneal inoculation of Streptococcus caviae. The streptococcic infection develops more rapidly when the B C G is inoculated intraperitoneally and at the same time as the streptococcus; on the other hand, a previous intraperitoneal inoculation of a massive dose of B C G protects the guinea-pig appreciably against a weak streptococcic infection.

Seroprophylaxis and Serotherapy in Tetanus.—Mutermilch and Salamon agree with the notion that the failures in subcutaneous and intravenous antitetanus serotherapy may be attributed to the fact that there is no penetration into the nervous system. Experiments prove that both toxin and antitoxin are absorbed by the cerebral tissue. Cutaneous or intravenous injections reach only part of the toxin lodged in the injured skin or general circulation but do not reach the toxin fixed by the nervous tissue. They recommend the incorporation of anatoxin and antitoxin administered through the subarachnoid route. There is immediate neutralization of toxin and at the same time the setting up of an active and rapid immunization. Intraspinal injections of 0.5 cc. of anatoxin cause no inconvenience in animals or in man. The authors suggest that the serum-anatoxin mixture be administered under chloroform anesthesia, since, according to another worker, serum injections are more effective under anesthesia than without anesthesia.

Archives de Médecine des Enfants, Paris

34: 581-644 (Oct.) 1931

*Medicosurgical Study of Perforations of Gallbladder in Typhoid of Children. R. Liège and A. Folliasson.—p. 581.

Perforation of Gallbladder in Typhoid of Children.—In the course of their study, Liège and Folliasson describe a case from their own experience and fourteen other cases gathered from the literature and summarize their observations as follows: Perforation of the gallbladder in the course of typhoid in the child is infrequent. The symptoms are sometimes mistaken for intestinal perforation—this diagnosis is rectified only by a systematic exploration of the biliary tract; and, again, clinical indications may show the existence of a cholecystitis with perforation. In the first case, the diagnosis is particularly delicate. Diagnosis is assisted by localization of the initial pain and contraction and the knowledge that the period of latency and peritoneal tolerance is longer in case of perforation of the gallbladder than in case of intestinal perforation. Without operation the mortality is 100 per cent, but surgical intervention, even late, leads to recovery in 66⅔ per cent of the cases. Cholecystostomy is the operation of choice; cholecystectomy is a more delicate and longer operation and the authors consider that it is contraindicated. Cholecystectomy does not prevent a

reinfection of the intestine by the infected bile. Cholecystostomy is also advised for children with severe typhoid in order to prevent later complications.

Presse Médicale, Paris

39: 1413-1428 (Sept. 26) 1931

Dental Focal Infection and Metastases. C. Grandclaude and P. Lesbre.—p. 1413.
Immediate Treatment of Open Fractures of Leg. G. Baudet.—p. 1415.
*Antivirus and Bacteriophage Combined in Treatment of Infections of Nasopharynx. E. Théobalt and R. Moline.—p. 1417.
Tubulated Strips in Rhinoplasty. F. Burian.—p. 1418.

Antivirus and Bacteriophage in Treatment of Infections of Nasopharynx.—Théobalt and Moline incorporated autobacteriophage and Besredka's antivirus therapy in the treatment of various diseases of the nasopharynx. The two preparations were put up in sealed ampules and used simultaneously or alternately according to the clinical indications. In rhinitis, the preparations were administered by instillations and nasal dressings. Plugs of gauze or absorbent cotton moist with the bacteriologic preparations were guided with a speculum and placed in contact with the middle and lower turbinated bones on both sides. No anesthesia was used; cocaine was believed to hinder the adsorption of the antivirus. Another method consisted in the use of an insufflator with a bent stem that could be curved round the lower edge of the soft palate and permit a retrograde insufflation capable of reaching the whole surface of the nasopharyngeal cavity, the posterior nares, the orifices of the eustachean tubes and the larynx. The patient was asked to expectorate and blow his nose and then was given another insufflation in the front of the nose, this time with an insufflator with a straight stem. The authors do not recommend the use of any antiseptic in association with this treatment. Eighty per cent of some thirty patients treated showed improvement and recovery. Only organisms predominating in the particular nasopharyngeal infections should be used in these bacteriologic preparations. The authors oppose the use of stock strains in the preparation of both antivirus and bacteriophage.

Schweizerische Medizinische Wochenschrift, Basel

61: 881-904 (Sept. 12) 1931

Goiter Problem. M. Hämmerli.—p. 881.
*Experimental Investigations on Significance of Duodenum for Metabolism. F. Silberstein and L. Hauswirth.—p. 885.
Diagnosis and Therapy of Eczema in General Practice. W. Lutz.—p. 888.
*Appendicitis in Aged Persons. R. Patry and W. Heer.—p. 891.
Appendicitis During Pregnancy. R. Meyer-Wildisen.—p. 894.

Experimental Investigations on Significance of Duodenum for Metabolism.—Silberstein and Hauswirth studied the changes in the sugar metabolism, in the water and mineral economy, in the protein metabolism and in the blood picture of dogs that had undergone duodenectomy. On the basis of their observations they reach the conclusion that the duodenum is not absolutely necessary, since dogs survive its complete excision for several years without noticeable impairment, provided there is no hindrance to the passage of bile and of the pancreatic juice into the intestine. However, the duodenum is not superfluous. It is of great significance for the regulation of the carbohydrate metabolism, as is proved by changes that are manifest during the first few months following duodenectomy. Later the lower portions of the intestine compensate for the loss of the duodenum and a normal condition is reestablished. Duodenectomy also influences the erythropoietic system, but the changes become manifest only when additional injurious influences develop.

Appendicitis in Aged Persons.—From observations in thirty-one cases of acute appendicitis in persons beyond the age of 45, Patry and Heer arrive at the following conclusions: The mortality from appendicitis is greater in the aged than in younger persons. In nearly two thirds of the cases the appendicitis is a relapse of a former attack. The diagnosis is frequently difficult because the clinical aspects are masked. Surgical treatment often involves technical difficulties, and the reduced resistance of the aging organism should be taken into consideration. Progressive cases require immediate surgical intervention, but if the process is stationary or tends to disappear, an expectant attitude is justified.

Archivio Italiano di Chirurgia, Bologna

30: 1-108 (Sept.) 1931

Anomalous Fixation of Ileocolic Loop and Appendicitis. M. Donati.—p. 1.
Gastroduodenal Ulcers That Appear Following Deviation of Bile. R. Pecco.—p. 23.
*Tar Cancer in Man. G. Bettazzi.—p. 45.
Acute Appendicitis and Strangulation of Illeum in Case of Cecal Ectopia. R. Palma.—p. 88.

Tar Cancer in Man.—Bettazzi reviews European and American literature on tar cancer in man, and discusses Italian statistics, giving an account of inquiries personally conducted in gas works and plants producing tar and by-products, and among insurance companies in regard to industrial accidents. He discovered three unusually interesting cases, which he describes, with comments on the pathogenesis and the clinical aspects of the disease. One of the cases is supplied with a detailed histopathologic study, from which the author develops views on the genesis of the primary blastomatous focus. The histologic picture of tar cancer in man is compared with the experimentally produced lesions in the rabbit and the rat, which brings out the individual characteristics. In conclusion the author comments on the modern views concerning this important occupational disease and offers suggestions as to the treatment of cancer and the protection of workmen against tar and its derivatives.

Pediatria, Naples

39: 905-976 (Sept. 1) 1931

Mechanism of Action of Autohemotherapy. C. Sorrentino.—p. 905.
*Late Manifestations of Exudative Diathesis. M. Cotellessa.—p. 915.
Virulence of Staphylococcus Aureus Infections of Bone Marrow. S. Rollo.—p. 949.

Late Manifestations of Exudative Diathesis.—Cotellessa concludes from his researches that exudative diathesis, in addition to the primary cutaneous manifestations, presents also, as late manifestations, special characters that go to make up the picture of the same constitution: symptoms of a lymphatic type, such as stridulous laryngitis, tonsillar hypertrophy, and lymphadenitis which may be regarded as late expressions of the same diathesis. The manifestations of exudative diathesis, whether primary or late, are related to the modifications of development and growth (weight, height, chest girth), which bring to the habitus of the subject certain changes that differentiate it from that of the normal child. One may generally assume that there will be a notable influence of the exudative types on the future of these subjects in relation to the changes in metabolism that are remotely observed.

Policlinico, Rome

38: 417-476 (Sept. 1) 1931. Medical Section

Chemical Composition and Physical Properties of Blood and Edema Fluid in Acute Edema in Man and in Experimental Edema. M. Piza.—p. 417.
*Water Test to Determine Functioning of Liver. A. Pozzi.—p. 435.
*Nasopharyngeal Syndrome Resulting from Functional Disturbances of Gallbladder. D. Campanacci and L. Pietrantoni.—p. 448.

Water Test to Determine Functioning of Liver.—Pozzi, on the assumption that the liver takes an active part in the water metabolism of the organism, applied systematically the water test to a number of liver patients and found that this test may be considered the best means of determining the functioning of the liver. On observing also in liver patients the modifications of diuresis under the action of merbaphen, he found that the results secured point to a direct action of that diuretic on the liver, the regulatory organ of water metabolism in the organism.

Nasopharyngeal Syndrome Resulting from Functional Disturbances of Gallbladder.—Campanacci and Pietrantoni, while they do not assert that they have discovered a new syndrome, affirm that certain enterocolic-pharyngeal syndromes, which occur in certain subjects, are etiologically related to an anatomic or functional lesion of the gallbladder. The etiopathogenic relations of such lesions with the nasopharyngeal lesion are brought out not only by clinical and roentgen research and operative control but also by experimental reproduction. In the etiology of the primary gallbladder lesion the neurosympathetic conditions of the patient, and, sometimes primarily

or secondarily, infection are involved, whereas in the etiology of the nasopharyngeal lesion the factor of infection is to be excluded or takes on secondary importance, being replaced by the primarily toxic disturbance of intestinal origin.

Archivos de Medicina Cirugía y Espec., Madrid

34: 797-816 (Aug. 29) 1931. Partial Index

*Treatment of Ulcers of Stomach by Injections of Pepsin. P. Buylla, C. Parreño and P. Coronado.—p. 804.

Treatment of Ulcers of Stomach by Injections of Pepsin.—Loeper's method of treatment for ulcers of the stomach by means of intramuscular injections of a solution of pepsin to which sodium benzoate is added, to remove the acidity and causticity of the pepsin, was described in the *Presse médicale* (**38:**1465 [Oct. 29] 1930; abstr. THE JOURNAL, January 10, p. 148). Buylla and his collaborators have used this treatment successfully in thirty patients with various kinds of gastric and duodenal ulcers. The curative effects of the treatment were excellent in all thirty cases in which it was employed, a complete clinical cure being obtained with one or two series of injections. The gastric acidity decreased in fourteen patients of the entire group; in six it increased and in ten it was not modified. Out of the entire group, only one patient presented a generalized erythema as a reaction and in one of them the intestinal pain, to which Loeper made a reference, was present. The solution of pepsin and sodium benzoate to be used should be freshly prepared since it soon loses its activity. The hypothesis of Loeper that the curative effect of pepsin is due to hypersensitization to pepsin that exists in persons with ulcer and hyperchlorhydria is problematic, for the authors believe rather that several factors (the principal of which would be a trophic action of pepsin, coming next in importance an activation of the cellular processes of healing and also probably a vagotonic action of pepsin) are responsible for the curative results. Though the cause of this effect of pepsin is not as yet determined, the practical results clearly indicate that the injections of pepsin according to Loeper's method have a manifest curative action on gastric and duodenal ulcers.

Archiv für Verdauungs-Krankheiten, Berlin

50: 1-144 (Aug.) 1931

Rhodan Content and Bactericidal Action of Human Gastric Juice. G. Lockemann and W. Ulrich.—p. 7.

*New Apparatus for Endoscopic Photography of Gastric Mucous Membrane. N. Henning.—p. 27.

Decomposition of Blood Pigment in Gastro-Intestinal Tract of Healthy Persons. F. Haurowitz.—p. 33.

Experimental Investigations on Influence of Various Types of Bread on Motor Function of Human Digestive Tract. A. Bickel and F. Fleischer. —p. 47.

Clinical Observations on Primary Ptosis of Stomach. O. J. Vandorfy. —p. 60.

Clinical Characteristics of Hepatargy. J. Lipez and J. Schapiro.—p. 70.

Influence of Wildungen and Fachingen Waters on Acid-Base Equilibrium in Urine. Claudia Keppel.—p. 82.

Diagnosis of Pancreatic Disturbances. M. M. Gubergritz.—p. 89.

Diet in Cholelithiasis and Pathogenesis of Biliary Colic. G. Hetényi. —p. 106.

Modification of Blood Sugar Curve by Oral Administration of Insulin. J. Seide.—p. 112.

New Apparatus for Endoscopic Photography of Gastric Mucous Membrane.—According to Henning it is possible to make a photographic record of the gastric mucous membrane by one of two methods, either by introducing a special camera into the stomach or by recording on a photographic plate the reflected image obtained by the gastroscope. The introduction of a camera into the stomach was described by Heilpern and Porges in the *Klinische Wochenschrift* (**9:**15 [Jan. 4] 1930; abstr. THE JOURNAL, March 8, 1930, p. 754). Elsner first attempted to attach a camera to the gastroscope, but since the apparatus had shortcomings the author modified and perfected it. He gives a detailed description of his apparatus, reports how he employed it and also gives reproductions of pictures obtained with it. In the last part of the article he emphasizes the advantages of this method. With its aid it is possible to make a photographic record of the gastroscopic observations. This eliminates the necessity of making sketches, which method requires more time and is generally less correct than a photograph.

Beiträge zur Klinik der Tuberkulose, Berlin

78: 243-350 (Aug. 20) 1931

Distribution of Main Forms of Tuberculosis as Observed on Necropsy Material of Pathologic Institute in Heidelberg. H. Rudel.—p. 243.

Influence of B C G Vaccination on Blood and Attempts to Effect Increase in Virulence of B C G by Experimental Injury of Test Animals (Macacus Rhesus). A. Nohlen and M. Sarvan.—p. 250.

*Modification of Experimental Tuberculosis of Guinea-Pigs by Means of Vitamin D. H. Theiss.—p. 264.

Acute Miliary Tuberculosis. K. Thums.—p. 273.

*Calcium Therapy of Pulmonary Tuberculosis. H. G. Scholtz.—p. 283.

Thalassotherapy in Intrathoracic Tuberculosis of Children. G. Herholz. —p. 287.

Pathologic Changes in Artificial Pneumothorax. I. Steiger.—p. 304.

Endangiitis Tuberculosa Aortae. J. Haas.—p. 315.

Gold Elimination by Kidneys. H. Döllken.—p. 325.

Blood Pressure, Blood Status and Blood Sedimentation in Dietary Treatment of Tuberculosis According to Gerson-Sauerbruch-Herrmannsdorfer. J. Leitner.—p. 331.

Behavior of Secretion of Gastric Juice During Dietary Treatment of Tuberculosis According to Gerson-Sauerbruch-Herrmannsdorfer. J. Leitner.—p. 337.

Determination of Phagocytic Capacity of Leukocytes in Tuberculosis. G. Platonow.—p. 347.

Modification of Experimental Tuberculosis by Means of Vitamin D.—Theiss investigated whether the development of experimental tuberculosis could be inhibited or arrested in its further progress by medication with vitamin D. In his experiments vitamin D checked the progress of experimental tuberculosis in guinea-pigs. Whether the favorable results were due to the fact that accidentally the right proportion was found between the virulence and the quantity of the bacilli, on the one hand, and the dose of vitamin D on the other, or whether it will always be possible to influence experimental tuberculosis of guinea-pigs with small doses of vitamin D has to be determined in future experiments. To infer merely from the success of his experiments that vitamin D should be effective in the treatment of human tuberculosis would be, according to the author, premature.

Calcium Therapy of Pulmonary Tuberculosis.—Reports about favorable results of calcium therapy in patients with pulmonary tuberculosis induced Scholtz to try this treatment on twenty-two patients with fresh exudative processes. Every second day the patients were given an intramuscular injection of 10 cc. of a 10 per cent solution of calcium gluconate. The author realizes that it is difficult to judge the therapeutic value of a treatment in patients with a fresh tuberculous process, since in many cases rest alone will effect considerable improvement. Nevertheless, on the basis of his observations he is convinced that medication with calcium exerts a marked influence on the exudation, for in 80 per cent of the patients with large quantities of sputum the expectoration decreased rapidly. Daily quantities of from 70 to 100 cc. of sputum were reduced to from 5 to 10 cc. The temperature likewise showed a marked reduction in many cases, but here the influence of the calcium therapy was not as convincing as in the case of the sputum. The sedimentation speed of the erythrocytes was not manifestly influenced by the calcium therapy, nor did roentgenoscopy reveal improvement in the pulmonary process; but some of the patients thought that the calcium medication improved their general condition. In many patients the night sweats were reduced. In three patients the calcium therapy did not exert any influence whatever. In the second part of the article the author reports his investigations on the mechanism of calcium therapy. Analysis of the blood on the days between those on which calcium was administered revealed that the calcium content was always somewhat increased, but the author does not agree with those who maintain that calcium deposits form in the pulmonary parenchyma, for he points out that necrotic tissues always have the tendency to absorb calcium. Experiments on rabbits revealed that parenteral administration of calcium does not increase the normal calcium content of the lung. Only the calcium content of the skin and of the muscles showed a slight increase. The influence of the calcium therapy on pulmonary tuberculosis is not due to a direct action on the diseased organ but rather to those qualities of the calcium that make the vessels less permeable and check inflammatory processes. Also, the calcium probably exerts its influence by way of the sympathetic nervous system and modifies the mineral metabolism, for it has been found that especially in chronic forms of tuberculosis the calcium content of the blood is usually considerably reduced.

Deutsche Medizinische Wochenschrift, Leipzig

57: 1653-1692 (Sept. 25) 1931

Definition of Capacity to Work. V. v. Weizsäcker.—p. 1653.
Diagnostic Significance of Myelography. K. Moser.—p. 1657.
Experimental Investigations on Liver Diet. H. Reiter.—p. 1660.
*Cinchophen Poisoning and Its Treatment. K. Eimer.—p. 1663.
Gas Gangrene Sepsis. H. Dobbek.—p. 1664.
Differential Diagnosis of Acute Pulmonary Diseases in Childhood. E. Loewy.—p. 1666.
Treatment of Trichophytic Diseases of Hands and Feet. J. Roos.—p. 1667.

Cinchophen Poisoning and Its Treatment.—Eimer points out that most books on pharmacology do not give a maximal dose for cinchophen nor do they mention toxic effects. Nevertheless, several cases of poisoning, resulting in fatal yellow atrophy of the liver, have been reported, and the author describes a case of his own observation, for he thinks that in a pharmacologic preparation so widely used as cinchophen it is necessary to call attention to such complications. In the case that he observed, an icterus gravis developed in the course of continued medication with cinchophen. He thinks that the toxic effects were the result of the cumulation of the medicament in the patient's organism, for in the course of forty-one days he had received 118 Gm. When the first signs of icterus appeared, those therapeutic measures were instituted which have proved helpful in cases of icterus; namely, administration of dextrose and insulin and stimulation of the inhibited flow of bile by duodenal irrigations with magnesium sulphate. The results of this treatment were favorable; the patient recovered. The author thinks that in order to avoid cinchophen poisoning the medicament should not be given uninterruptedly for long periods but that cinchophen-free intervals should be interposed. For cases in which signs of icterus develop, he recommends the treatment that he found effective in the reported case.

Klinische Wochenschrift, Berlin

10: 1649-1696 (Sept. 5) 1931

Iodine Circulation in Nature and Its Relation to Human Beings. A. Sturm.—p. 1649.
*Successful Transmission of Lymphogranuloma Inguinale to Guinea-Pigs. K. Meyer, H. Rosenfeld and H. E. Anders.—p. 1653.
*Histogenesis and Pathogenesis of Lymphogranuloma Inguinale That Has Been Transmitted to Guinea-Pigs. H. E. Anders.—p. 1655.
*Transmission of Lymphogranuloma Inguinale to Rabbits and Guinea-Pigs. H. Freund and F. Reiss.—p. 1658.
*Contrast Visualization of Veins in Roentgenogram. M. Sgalitzer, V. Kollert and R. Demel.—p. 1659.
Reciprocal Action Between Leukemia and Tuberculosis. G. Holler.—p. 1663.
Mineral Content of Epidermis and Cutis. R. M. Bohnstedt.—p. 1666.
Significance of Osmotic Pressure of Proteins of Blood in Internal Medicine. S. I. Malkin.—p. 1669.
Estimation of Preparations of Pancreatic Substitutes on Basis of Laboratory Tests. S. Hermann and P. Neuschu.—p. 1670.
Perforation into Lung of Cold Abscess Caused by Tuberculous Spondylitis. A. Leszler.—p. 1671.

Successful Transmission of Lymphogranuloma Inguinale to Guinea-Pigs.—Meyer and his associates inoculated guinea-pigs with pus from patients with lymphogranuloma inguinale. It was observed that the animals developed a characteristic infection, which was transmittable from one animal to another. The infection did not remain localized to the site of inoculation but spread from the regional lymph nodes first to the more remote lymph nodes and finally became localized in internal organs such as the liver and lung. The authors consider these experiments of significance since they prove the possibility of studying lymphogranuloma inguinale on animals. It will be possible not only to study the nature of the pathogenic agent but also to make therapeutic experiments and investigate particularly the feasibility of chemotherapy.

Histogenesis and Pathogenesis of Lymphogranuloma Inguinale.—By subcutaneous inoculation of pus or of substance from the inguinal lymph nodes of ten patients with lymphogranuloma inguinale into the inguinal region of guinea-pigs, Anders succeeded in transmitting the disease to the animals. The further transmission from one animal to another proved likewise possible. One strain of the virus could be transmitted through five passages and another one even through twelve passages. It was also found that the virus is filtrable through the Berkefeld filter, and that it has great resistance against heat as well as against glycerin. Microscopic studies revealed that the changes in animals are identical with those in man.

Transmission of Lymphogranuloma Inguinale to Rabbits.—By subdural inoculation of rabbits with material from human lymphogranuloma inguinale, Freund and Reiss were able to produce a characteristic meningo-encephalitis. With brain substance from these animals and with material from patients with lymphogranuloma inguinale they were able to produce characteristic tumors in the inguinal region of rabbits. From rabbits the condition could be transmitted to guinea-pigs and vice versa.

Contrast Visualization of Veins in Roentgenogram.—Sgalitzer and his associates studied the veins and the venous circulation of the extremity following intravenous injection of iopax. They found that the valvular apparatus appears different when the central stream takes the direction of its closure than when it flows in the opposite direction. A valvular apparatus that functions properly can be differentiated from one with impaired function. Observation before the roentgen apparatus also revealed that the width of the venous lumen fluctuates. Contraction may cause, even under normal conditions, a temporary reversal of the blood stream. The varicose vein is dilated, and valvular insufficiency and changes in the walls can likewise be detected by means of roentgen rays. There are weak muscular contractions that force the blood through the diseased veins, but the fluctuations in the lumen, as observed in normal veins, are absent. The authors also studied the venous system in the region of an ulcus cruris and in an hemangioma. For the treatment of hemangioma they advise injection of hypertonic solution of sugar.

Zeitschrift f. d. ges. Experimentelle Medizin, Berlin

78: 1-286 (Aug. 12) 1931

Refractory Phase of Excitation Conduction in Normal Myocardium and After Poisoning with Digitalis. F. Schellong.—p. 1.
Physiochemical Investigations in Experimental Lypoidemia. E. Rix and E. Müller.—p. 15.
Barium Chloride Tachycardia and Its Modification by Carbon Dioxide and Quinine. C. K. Friedberg and B. Levinson.—p. 32.
Metabolism Tests Under Influence of Orally Administered Saponin. R. Rittmann and B. Leubner.—p. 61.
Quantitative Determination of Carbon Dioxide and of Oxygen in Air, Especially in Expired Air. A. G. Vollmer.—p. 93.
Influence of Serum on Preparation of Strip of Cardiac Tissue from Normal and Anaphylactic Animals. M. Wachstein.—p. 134.
Conditions for Penetration of Virus of Rabies Into Lacrimal Glands. A. M. Tscheschkow.—p. 142.
Physiology of Sweat Glands. K. Katz.—p. 147.
*Protein Content and Colloid-Osmotic Pressure of Serum of Patients with Fever. H. A. Oelkers and G. Ohnesorge.—p. 156.
*Sedimentation Speed and Rheumatic Diseases. Eleonore von Balden.—p. 164.
Modification of Quantity of Circulating Blood by Physical and Pharmacologic Measures. W. Brednow.—p. 177.
*Changes in Electrocardiogram and in Sphygmogram of Human Beings Under Influence of Tobacco Smoke. A. S. Ssalischtscheff and J. A. Tschernogoroff.—p. 193.
Tests with Phlorhizin in Patients with Renal Diseases (Amyloid Nephrosis). H. Hoffmann.—p. 202.
Hyperglycemia Following Administration of Phlorhizin in Persons with Renal Disorders. H. Hoffmann.—p. 207.
Modification of Blood Sugar by Spleen Hormone. O. Heppe and E. Schliephake.—p. 209.
Effect of Treatment with Dextrose and Insulin During Reduced Barometric Pressure. F. Heimann.—p. 223.
Endothelial Symptom. P. Wiemer.—p. 229.
*Reticulocytes (Erythrocytes Under Vital Staining) and Water Content of Blood. F. Fischer.—p. 246.
*Reaction of Blood Vessels Under Influence of Illuminating Gas. M. Abe.—p. 254.
Metabolism Test in Beginning Rickets: Stages of Rickets According to Phases of Disturbances in Mineral Economy. E. Rominger, H. Meyer and C. Bomskov.—p. 259.
Disturbances in Phosphorus Metabolism in Experimental Thallium Rickets. E. Rominger, H. Meyer and C. Bomskov.—p. 272.

Protein Content and Colloid-Osmotic Pressure of Serum of Patients with Fever.—Oelkers and Ohnesorge determined the protein content, the protein composition and the osmotic pressure during fever and during convalescence. They found that the protein content of the serum of patients with febrile diseases was only in rare cases below the normal. During the convalescence there was no increase in the protein content of the serum, but in some cases it was rather low. The colloid-osmotic pressure of the serum was in most patients at the lower limit of the values found in healthy persons, and in several patients it was somewhat lower. In this respect there was no difference between patients who still had fever

and those who were already free from fever. The colloid-osmotic pressure did not always go parallel with the quantity and the composition of the protein in the serum. The question of water retention during fever cannot be decided on the basis of these observations, since the significance of colloid-osmotic pressure for water retention is not fully understood. It was found that the sedimentation speed of erythrocytes was not influenced by the increase in globulin.

Sedimentation Speed and Rheumatic Diseases.—On the basis of reports in the literature and of her own investigations, von Balden shows the essential relations between the erythrocyte sedimentation speed and the diseases of the motor apparatus. The sedimentation reaction is of greatest significance for the prognosis. However, a too hasty evaluation of the sedimentation curve may lead to erroneous conclusions. The author emphasizes the necessity of serial tests, the continuous control of the sedimentation speed during the entire course of the disease.

Changes in Electrocardiogram of Human Beings Under Influence of Tobacco Smoke.—After calling attention to their former investigation on the influence of nicotine on the electrocardiogram of rabbits, Ssalischtscheff and Tschernogoroff report tests on thirteen healthy persons, of whom nine were nonsmokers and four were habitual smokers. On an empty stomach these persons smoked cigars or cigarets until signs of intoxication became manifest. Before and at regular intervals during the experiment, electrocardiographic and sphygmographic tests were made. The results of these tests are shown in tables and in reproductions of a number of electrocardiograms. On the basis of their observations the authors reach the following conclusions: 1. The tachycardia that results from intoxication with tobacco smoke represents the cardinal symptom of a generalized irritation of the sympathetic nervous system. 2. The retardation of the rhythm at the height of the intoxication manifestations, and the sino-auricular block, which is of vagal origin, are signs of the vagotropic action of nicotine, but they were detected in only a few of the cases. 3. The form and the height of the electrocardiographic deflections remained unchanged in the majority of cases. 4. The increased systolic index is an indication that the function of the myocardium is impaired. 5. The changes in the sphygmogram that are observed during smoking are the result of a decreased tonus of the larger arteries; as accompanying manifestation there develops a contraction of the small peripheral arteries with a simultaneous increase in the systolic blood pressure.

Reticulocytes (Erythrocytes Under Vital Staining) and Water Content of Blood.—Tests on eighteen persons convinced Fischer that a relationship exists between the water content and the percentage of reticulocytes in the circulating blood. When the water content increases, that is, when the blood becomes thinner, the reticulocytes also increase, in the healthy organism and under physiologic conditions as well as in the diseased organism and under the influence of medicaments.

Reactions of Blood Vessels Under Influence of Illuminating Gas.—Abe points out that there are various theories that attempt to explain the mechanism of softening of the brain in carbon monoxide poisoning. Most authors are inclined to consider vasodilatation resulting from vasomotor paralysis as the cause. However, the author is convinced that the anatomic changes detected during the postmortem examination do not explain the entire course of the changes but represent only the last phase. In order to gain a better understanding of the entire process he made biologic experiments on frogs and rabbits. He describes the technic and thus sums up the results of his tests: The illuminating gas exerts its influence on the peripheral vasoconstrictor nerves. A small quantity of gas first stimulates the peripheral vasoconstrictor nerves and effects a contraction of the vessels. A large quantity of gas or prolonged exposure to its influence effects paralysis of the peripheral vasomotor nerves and the vessels become dilated. A slight diversity in the influence of gas on frogs and on rabbits is probably due to the difference in the susceptibility of cold-blooded and warm-blooded animals. These tests throw light on the mechanism of acute carbon monoxide poisoning in that they explain the significance of the contraction of the cerebral vessels, by which softening of the brain is effected. The author considers the vasodilatation of only secondary significance.

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*Sweat Secretion in Human Beings in Its Relations to Nervous System. L. Guttmann.—p. 1.
Stabilization of Body Posture. J. W. Hultkrantz.—p. 49.
*Stupor in Circular and Schizophrenic Psychoses. K. H. Langenstrass and Ethel Friedman-Buchman.—p. 83.
Multiple Confluent Sclerosis of Medullary Layer in Monkeys, Combined with Systemic Disease of Optic Nerve as Well as of Posterior Roots and Posterior Columns. F. Schob.—p. 95.
Clinical Aspects and Histopathology of Pick's Cerebral Atrophy. M. Liebers.—p. 131.
*Gasanalytic Investigations on Cerebrospinal Fluid of Patients with Nervous Disorders (Alkali Reserve). A. E. Kulkow and M. E. Tarnopolskaja.—p. 143.
*Cerebral Changes Following Alcohol Abuse (with Consideration of Several Cases of Acute Hemorrhagic Poliencephalitis of Different Origin). K. Neubürger.—p. 158.
Functional Genetic Analysis of Cerebrospinal Fluid. V. Kafka.—p. 210.
Investigations on Heredity in Feebleminded Children. W. Pleger.—p. 225.
Silver Impregnation in Demonstration of Neuroglia: Its Results. M. Bielschowsky.—p. 253.
Epinephrine Probe Test in Localization of Cerebral Tumor. O. Muck.—p. 279.
Simon and Hinrichsen: Comparative Study of the Two Psychiatrists. A. Pauncz.—p. 282.
Schizophrenic Psychoses with Identical Course in Binovular Twins. J. Jacobi.—p. 298.
*Left-Handedness and Heredity. A. Schott.—p. 305.
Deviation to Left in Blood Picture of Schizophrenic Patients. R. Carrière.—p. 314.
Therapy of Schizophrenia. L. Wolfer.—p. 321.

Sweat Secretion in Human Beings in Its Relations to Nervous System.—In his comprehensive article Guttmann first gives a short history of the investigations on sweat secretion and mentions workers who have made important contributions in this field. He states that, although it has long been acknowledged that the action of the sweat glands is under direct nervous influence, the mechanism of correlation between the sweat glands and the nervous system is still not fully understood. The question which is at present the focus of interest is that of the double or antagonistic innervation of the sweat glands by the sympathetic and parasympathetic nerves. In spite of the fact that the antagonistic action of the sympathetic and parasympathetic nerves is generally accepted with regard to the internal organs, it is still not entirely understood in the case of the organs of the skin: the sweat glands, the sebaceous glands and the pilomotor nerves. The author enumerates the difficulties in the investigations on the innervation of the sweat glands and describes the methods which he employed in his studies, especially the use of pharmaceutic preparations. Further, the individual variations in the normal sweat fields are discussed and then follows a discourse on the relations between sweat secretion and the various parts of the nervous system; namely, the peripheral nerves, the anterior and posterior roots, the spinal sweat centers, the medulla oblongata, the midbrain and the cerebral cortex.

Stupor in Circular and Schizophrenic Psychoses.—Langenstrass and Friedman-Buchman describe three methods for the active treatment of stupor reactions in functional psychoses; namely, pyretotherapy, psychotherapy and inhalation of carbon dioxide. They give the clinical histories of four patients in whom permanent results were obtained. Details of the treatments and the action mechanisms are discussed, and suggestions are made for further development and for application in other conditions.

Gasanalytic Investigations on Cerebrospinal Fluid of Patients with Nervous Disorders.—Kulkow and Tarnopolskaja found that the carbon dioxide content or the alkali reserve of the cerebrospinal fluid varies in the various nervous disorders. The greatest carbon dioxide content of the cerebrospinal fluid was observed in cases of dementia paralytica and of genuine epilepsy and also in chronic alcoholism (alkalosis). A marked acidosis (greatest carbon dioxide content) was observed in meningitis; then followed in ascending order the toxic forms (cases of poisoning), the diffuse disorders of the brain, encephalitis, multiple sclerosis and symptomatic epilepsy. A normal condition of the cerebrospinal fluid was observed in patients with tumors of the brain or of the spinal cord and in those with tabes dorsalis. In cerebrospinal syphilis, slight fluctuations toward the alkalotic side were noted.

The authors put especial stress on the increased carbon dioxide content in cases of tabetic atrophy of the optic nerve, for in other forms of tabes it is normal. The alkalosis of the cerebrospinal fluid in genuine epilepsy is noteworthy because it is of significance for the pathogenesis.

Cerebral Changes Following Alcohol Abuse. — Neubürger reports his studies on the morphology, nature, localization and pathogenesis of alcohologenic changes in the brain and also the occurrence of such changes following other forms of intoxication. He gives thirty-five case histories and reports the results of the postmortem examinations. In describing the results of microscopic examination he emphasizes a number of changes, which, because of their nature and their localization, are characteristic. In the typical cases always and in the less typical quite often, the corpus mammillare is involved. Likewise frequently but not quite as regularly involved are the posterior corpora quadrigemina, the gray matter underneath the aqueduct, and the olive. It was also found and particularly in cases with fresh poliencephalitis hemorrhagica superior that the following regions had pathologic changes: the nuclei of the vagus and of the vestibularis, the region dorsal to the aqueduct, the locus caeruleus, the nuclei of the ocular muscles, those areas of the thalamus and of the hypothalamus adjoining the ventricles, the nucleus paraventricularis, the tuber cinereum and occasionally also the corpus callosum and the fornix. In some of the other cases the substantia nigra, the striatum and the cortex were involved. The nature of the pathologic changes varies widely. Nevertheless, in a considerable number of cases the following were found characteristic: proliferative manifestations on the small vessels in the form of proliferation of the endothelial cells and of the elements of the adventitia, and the formation of mesenchymal networks; also proliferations of the glia; the ganglion cells were comparatively well preserved. In the diseased portions of the brain, especially in the central portions of the corpora mammillaria, the changes are often such that in macroscopic observation they impress one as areas of "softening." Microscopy reveals fatty granular cells, so that one may speak of softening. Thus the alcohologenic softening of the corpus mammillare can be differentiated from the ordinary vascular softening. Hemorrhages and cellular infiltrations are of only secondary importance in the alcohologenic cerebral changes. The author further gives a short review of the literature and after comparing his own observations with those of other authors he once more emphasizes those of his observations that were not mentioned in former reports. Further it is pointed out that alcoholism creates susceptible regions in the brain which may become manifest by various causes. In the conclusion the author stresses again that he considers as especially characteristic for the alcohologenic cerebral changes their structure in the form of pseudomalacia and their topographic position. The poliencephalitis hemorrhagica superior is a special form of the alcohologenic changes and in exceptional cases it may be caused by other exogenic and endogenic intoxication. The author's studies prove from the anatomic standpoint that the abuse of alcohol causes serious changes in the brain in a great many cases, and he is convinced that absence of anatomic changes in chronic alcoholism will become rarer, the more careful the examination is made.

Left-Handedness and Heredity.—Schott points out that a discussion on left-handedness must also consider its hereditary character. Because the opinions of various investigators differ about this point, the author gives a review of the literature and then reports the results of his own investigations. After stating that the incidence of left-handedness is higher than is generally believed, and that it is more prevalent in the male than in the female sex, he discusses the manner in which left-handedness is passed on from one generation to the other. It appears that in left-handedness in the male sex the influence from the paternal side seems to be of primary importance, whereas in the female sex the influence from the maternal side seems to be of greater significance. In the left-handed males the author found a history of left-handedness on the paternal side in 33.05 per cent and on the maternal side in 27.55 per cent of the cases. If there is left-handedness in both parents, the female offspring seems to be more often affected than the male offspring. In about one third of the left-handed persons it was found that several members of their families were left-handed. The author further reports the hereditary significance of the grandparents, and of the parental sisters and brothers and also the incidence of left-handedness in the sisters and brothers. He concludes that an hereditary influence in left-handedness cannot be denied, yet a definite type of hereditary transmission cannot be formulated, and many problems are still unsolved.

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Aug. 15, 1931, number 15, pp. 1123-1202

*Meningoradicular Syndrome in Heine-Medin's Disease. M. I. Iogikhes.—p. 1125.
*Preparation of Highly Potent Bacterial Toxin: Bacillus Tetani. A. V. Ponomarev and G. A. Pavlov.—p. 1130.
*Biliary Drainage in Azoturia. V. V. Gerbst.—p. 1133.
Crummy Macroscopic Appearance of Blood Smears in Lobar Pneumonia. M. D. Tushinskiy, L. A. Musicant, G. S. Kaybanov and I. N. Chulkov.—p. 1138.
Streptococcus in Epidemiology of Scarlet Fever. M. P. Izabolinskiy and V. A. Yudenich.—p. 1142.
Roentgenogram in Normal and Pathologic Lungs. O. O. Den.—p. 1146.
Classification of Epidemic Cerebrospinal Meningitis. N. M. Frishman.—p. 1151..
Consideration of Professional Infections. V. A. Beyer and E. F. Kalitovskiy.—p. 1153.

Meningoradicular Syndrome in Heine-Medin's Disease.—In his studies, Iogikhes included 16 instances of Heine-Medin's disease of the meningoradicular form, 5 of which were observed in the epidemic of 1925-1929, and 11 (among 21 poliomyelitis cases) observed in the fall of 1930 (120 cases were reported from the literature before that time). Among all the meningoradicular forms reported in 1930, not one was of the epidemic type. His observations were as follows: The meningoradicular syndrome in Heine-Medin's disease is complicated with polyarthritis in the older children primarily. There were no instances in the first two years of life; two instances were noted in the 2 to 3, seven in the 3 to 6, and seven above the 6 year age groups. The incidence was the same among boys and girls. The syndrome is most often complicated by generalized polyarthritis. All four extremities were affected in eleven cases (in four there was a complication of the diaphragm as well); two extremities were affected in four cases and one extremity was affected in one case. General brain involvement was not observed. Three patients may have had a cerebral involvement with fever (one of these had the myelobulbar-pontile form). The meningoradicular symptoms were most often localized in the anterior processes: lower extremities, spine, neck; seven included the upper extremities. The disease was limited in only four instances (paralysis in both lower limbs in one instance). In two instances the syndrome appeared at the twenty-fifth and thirty-fifth days, and in the rest the fortieth day following the onset of the acute anterior poliomyelitis infection. Nervous involvement in three instances lasted from one to two days. During the presence of the syndrome, examination of the cerebrospinal fluid revealed a hyperalbuminosis that lasted three weeks or more; leukocytosis was apparent in the spinal fluid only during the first days. The appearance of the syndrome did not make the prognosis more serious. The complicating symptoms of the syndrome were always limited, as judged by a consideration of the chronic state of the infantile paralysis itself, its aggravation and its possible spread.

Preparation of Highly Potent Tetanus Toxin.—Ponomarev and Pavlov as a result of their experiments conclude that old (one to three year) cultures of Bacillus tetani are better generators of toxin than freshly isolated cultures of the same strain. The seeding of old cultures on various mediums produces a much more potent toxin. The maximum potency is obtained after the same time interval as when freshly isolated strains are used. The authors suggest the use of old cultures in mass preparation of toxin for the subsequent preparation of antiserum.

Aspiration of Bile in Azoturia.—Gerbst included in his studies two cases of acute nephrosonephritis complicated with azoturia, one case of uncomplicated acute nephrosonephritis, one case of chronic nephrosonephritis and one case of chronic nephritis with nephrosclerosis. He used a modification of the Einhorn duodenal tube which had an outside diameter of 5 mm. and an inside diameter of 3 mm. The duodenal end of the tube

was smooth and round and contained six round openings, three on each side. The tube was inserted through the nose, from 40 to 50 cc. of warm 33 per cent solution of magnesium sulphate was introduced into the duodenum and after two or three hours from 200 to 500 cc. of duodenal bile was aspirated into a receptacle. The author made the following observations: Aspiration of bile, especially in cases of acute nephritis, quickly modified and relieved the uremic syndrome; the blood urea was markedly decreased (the aspirated bile contained a high concentration of urea); the blood pressure was decreased; the cardiac condition was improved; the aim in regard to the renal system was realized; and the entire clinical picture became favorable. The author admits that his conclusions should be based on much more extensive experimentation.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

75: 4510-4600 (Sept. 5) 1931

Icterus Gravis and Its Treatment. P. Daniels.—p. 4510.
Pyometra with Cancer of Uterus. R. Remmelts.—p. 4520.
*Tuberculosis in Infants. C. de Lange and M. de Bruin.—p. 4528.
Tuberculous Meningitis: Case. P. van Hasselt.—p. 4559.

Tuberculosis in Infants.—De Lange and de Bruin point out that when infants with tuberculosis are put in a hospital for treatment they are often kept there too long. Admission to a hospital for a short observation may be desirable, as it affords an opportunity to determine the nature of the process and the degree of activity. But when that has been ascertained, by far the majority of such children should be no longer kept in a children's clinic but should be transferred at once to a sanatorium. Most hospitals are not so well equipped for open-air and light treatment as are the sanatoriums. Certain examinations or methods of treatment that can be carried out better (or solely) in a hospital need not be considered with respect to tuberculosis in infants. Then, too, the cost of care is higher in the hospital than in the sanatorium. Finally, such children are not entirely without danger for their environment, which is a highly important matter in a children's clinic. It is not true that a young child with tuberculosis who looks well and coughs little, if any, cannot transmit tubercle bacilli in his environment. Tests during recent years have shown that a systematic examination of the stomach contents, fasting, will often reveal the presence of tubercle bacilli in such children.

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92: 557-676 (June) 1931

*Hereditary Relations in Cancer Judged by Material Collected by Norwegian Committee on Cancer. G. H. M. Waaler.—p. 557.
*Cancer in Women and Climacterium. F. G. Gade.—p. 593.
*Case of Acute Spondylitis with Epidural Abscess. C. Semb and O. Sundt.—p. 597.
*"Intestinal Polyposis." H. Schilling and O. Berner.—p. 602.
*Cancer ex Ulcere. W. F. Baastad.—p. 614.
*Eczema Due to Suppositories Containing Quinine in Persons Hypersensitive to Quinine. N. Danbolt.—p. 623.

Hereditary Relations in Cancer.—The basis for Waaler's investigations consists of the answers to questionnaires as to the cause of death among the relations, especially the brothers and sisters, husband or wife, and parents, of the approximately 6,000 patients with cancer reported to the Norwegian Committee on Cancer since 1908. The results are united in the following hypothesis: There are two hereditary factors which independently of each other produce a disposition to cancer. Each one of these tendencies to cancer appears with a frequency of about 16 per cent. One anlage is about equally active in men and women; the other is more active in women. Further, cancer not infrequently occurs in men without these factors, far less often in women without them. To what extent these factors are dominant or recessive is uncertain, but recessivity seems more probable. Waaler states that the frequent occurrence of cancer in brothers and sisters and parents of cancer patients, together with the marked variation of the cancer probability in various groups and the similarity in the localization of the cancer in the same group, might be explained as depending on the milieu, but the fact which points most to the significance of heredity is the more frequent occurrence of cancer in brothers and sisters than in the spouse, although the former usually separate in their twenties, often to live under different conditions, while from that age on husband and wife have the same living conditions. Only a material as large as this is believed to suffice to disclose the likelihood of a difference between the incidence of cancer among the brothers and sisters of cancer patients and the incidence in the population in general.

Cancer in Women and the Climacterium.—Gade states that Norwegian cancer statistics from 1924 to 1928, like those from 1919 to 1923, show (1) that cancers of the ovary, uterus and breast have a common mortality maximum about the age of 50 and (2) that the mortality curves for these cancers are almost identical, although the three organs differ in anatomic structure and physiologic function. Similar conditions are revealed in the cancer statistics of England and Wales from 1911 to 1926. The coincidence between the climacterium and cancer of the female organs apparently points to a biologic phenomenon, just as senility of the entire body favors the development of cancer in general.

Case of Acute Spondylitis with Epidural Abscess.—In the patient of Semb and Sundt, a boy aged 10, with onset of general infection without local symptoms, symptoms from the spinal column appeared on the third and fourth days. There was marked pain and pronounced stiffness and tenderness in the back, some stiffness of the neck, and positive Kernig sign, and lumbar puncture gave a thick pus with staphylococci; the cistern punctate was aseptic. The diagnosis of acute osteomyelitis of the spinal column with epidural abscess was confirmed at necropsy.

"Intestinal Polyposis."—Schilling and Berner report two characteristic cases seen in 1929, in men aged 24 and 44, respectively. They state that the tumors (adenomas) appear, usually in adult age, on the basis of an hereditary or familial factor, and that about one half of the patients die from cancer. Their first patient died from cancer metastasis, particularly to the liver; the second did not have cancer. The polypi, as established in their case with cancer, are at the start true adenomas, one or more of which later undergo malignant degeneration and develop into cancer. With regard to the hereditary factor, the authors call attention to the fact that solitary polypi in one of the parents may be followed by polyposis in one or more of the children, and to the alternating occurrence of cancer of the rectum and polyposis. Since in cancer of the rectum polypi are often present in the vicinity, this should be borne in mind during operative treatment. Many "recurrences" in rectal cancer are due to the presence of polypi with so strong a tendency to proliferation that they themselves develop into cancer after removal of the main tumor.

Cancer ex Ulcere.—Baastad's case in a woman with history of gastric ulcer for twelve years seems to afford evidence for the development of cancer from an ulcer. Clinical and roentgenologic examinations pointed to ulcer, and neither the stomach as seen during laparotomy nor the macroscopic view of the resected portion of the stomach suggested cancer, but microscopic examination of the excised portion disclosed a circumscribed cancer developing in the margin of a simple ulcer.

Eczema Due to Suppositories Containing Quinine.—In Danbolt's two cases of genital eczema following the use of contraceptive suppositories containing quinine, with secondary staphylococcus infection, a marked idiosyncrasy to quinine was established on the application of 0.5 per cent solution of quinine chloride on the intact skin (Bloch).

Ugeskrift for Læger, Copenhagen

93: 829-844 (Aug. 13) 1931

*Case of Foreign Body in Esophagus. E. A. Hallas.—p. 829.
Electrocardiogram of Normal Children. B. R. Hansen.—p. 832.

Case of Foreign Body in Esophagus.—Hallas reports a case in which a toy bracelet watch swallowed by a girl, aged 3, remained for a time in the esophagus, then passed into the stomach, as established roentgenologically, and appeared to have become stationary there. On gastrotomy, however, the watch was not found in the stomach, duodenum or jejunum. Renewed roentgen examination disclosed it in the esophagus, at the level of the manubrium of the sternum, where it had been cast up during anesthesia. The author easily accomplished removal with an esophagoscope while the child was still under the anesthetic. Recovery was uneventful.